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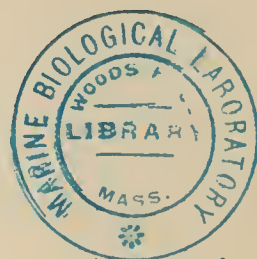
ICONES OF JAPANESE ALGÆ.

Vol. III. No. I.

BY

K. Okamura *Rigakuhakushi.*

Contents of No. I. (PL. CI—CV.)



Plocamium abnorme Hook. et Harv.	ゆ	か	り
Plocamium recurvatum Okam. n. sp.	ま	き	ゆ か り
Spyridia filamentosa (Wulf.) Harv.	う	ぶ	げ ぐ さ
Plocamium oviforme Okam.	ひ	め	ゆ か り
Plocamium leptophyllum Kuetz. var. flexuosum J. Ag.	ほ	そ	ゆ か り
Dictyota patens J. Ag.	こ	も	ん あ み ち
Caulerpa Freycinetii var. typica f. la'ta Weber van Bosse.	よ	れ	づ た
„ „ var. de Boryana f. occidentalis			
Weber van Bosse.	さ	い	は い づ た
Acetabularia polyphysoides Crouan.	ひ	な	か さ の り

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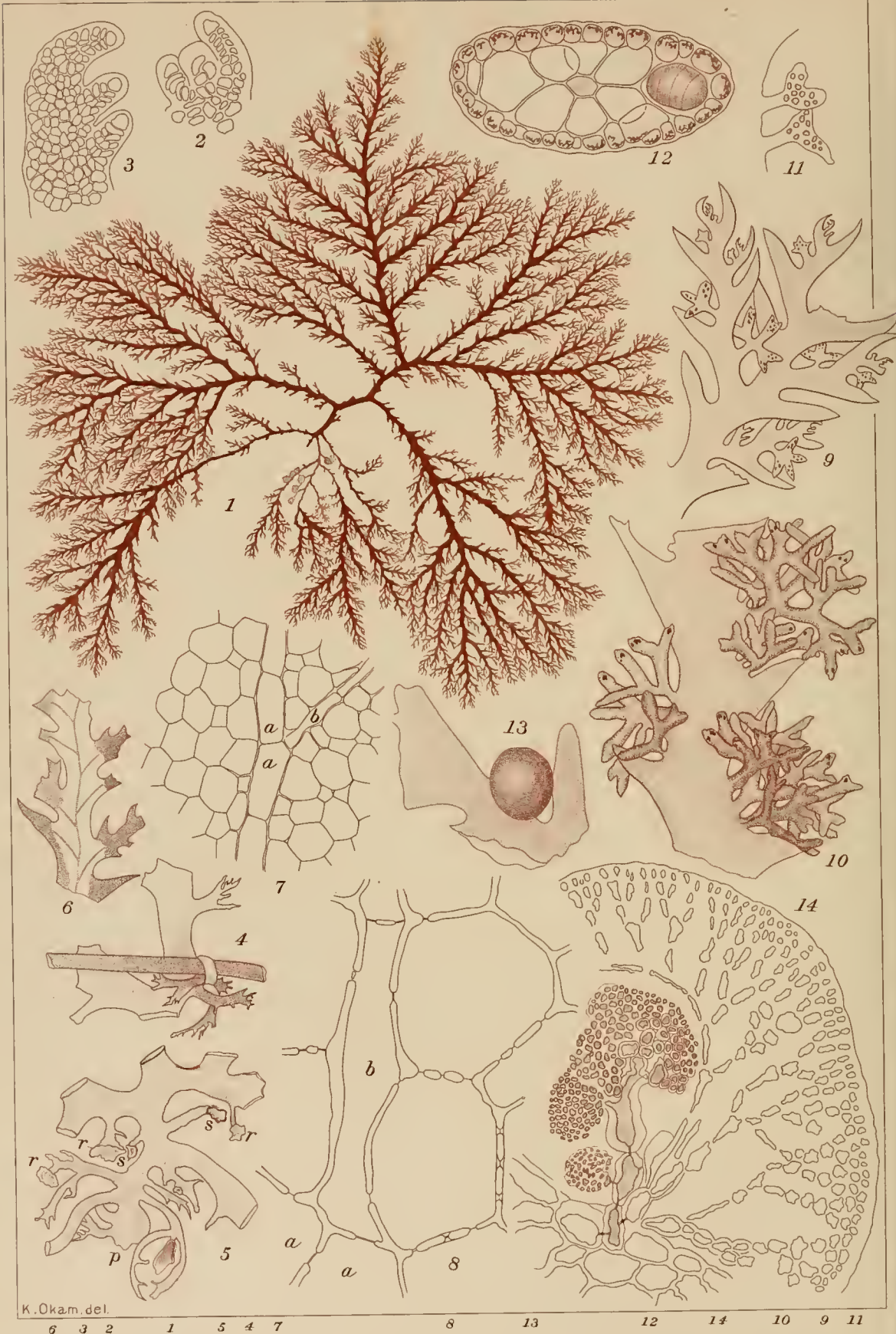
by

THE AUTHOR.

May, 1913.

Tokyo.





K. Okam. del.

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Plocamium abnorme Hook. et Harv. ゆかり.





K. Okam. del.

Plocamium abnorme Hook. et. Harv. var. *uncinatum* Okam. n. var. ㄅㄅㄅㄅ 変種 Fig. 1-2.

Plocamium recurvatum Okam. n. sp. かぎㄅㄅㄅ Fig. 3-4.

Spyridia filamentosa Harv. うぶげぐさ Fig. 5-14.

Plocamium abnorme Hook. et Harv.

Nom. Jap.: *Yukari*.

PL. CI.

Plocamium abnorme Hook. et Harv. *Alg. Nov. Zel. in Hook. Journ. p. 543*; J. Ag. Sp. Alg. II, p. 401, Epicr. p. 343; Harv. Ner. Austr. t. XLIII; Kütz. Tab. Phyc. Vol. XVI, t. 50, f. d-e.

*Fronde*s numerous from the same base forming a subglobose tuft, attaching to stones, rocks, shells etc. by basal fibrous roots transformed from branchlets (sometimes the plant attaches to another alga by upper branches as shown in fig. 4), compressed, linear or filiform, thin, membranaceous, generally nearly 7 cm. high, but sometimes not above 5 cm. and at others 15 cm. long, their width about 0.5-2 mm., often very fine upwards, everywhere gently flexuose, much branched from the very base, or in some robust ones lower portions denudated and furnished with remains of wasted branches. Size of fronds, breadth of parts, density of branches and the substance much vary according to specimens. Branches all distichous, 3-4 times decompound pinnate, alternate and patent, the lower ones longer than the upper and gradually becoming shorter above, so that the ramification is somewhat corymbose; they are throughout alternate in geminate manner, of which the lower one is always simple and the upper decompound, and the simple one is 2-3 mm. long, entire, tapering to a fine point from broader base, and more or less incurved. In extreme branches ramuli are also arranged in alternate rows, two on one side (sometimes here and there three) and as many on the other, in all of which lower or the lowest one is always simple and the upper with

still smaller ramelli on their upper sides.—*Tetrasporangia* are formed in sporophylls which are seriated along the axils; sporophylls are in some almost simple or sparingly branched, in others much branched in stellate manner or dichotomo-decompound, with sub lanceolate or linear ramuli and sustained with a short pedicel and contain double rows of zonate tetraspores. *Cystocarps* globular and sessile formed on the sides of branches. *Colour* a beautiful red. *Substance* thin membranaceous, somewhat soft cartilaginous in robust ones and the plant adheres to paper in drying except robust ones.

Remarks.: In making the identification of the present plant I have not been able to see any reliable specimens except the literature quoted above. Plant enumerated in Martens' Preus. Exped. n. Ost-Asien, Bot., p. 119 under the name *Plocanium affine* Kg. which was collected on *Capca Richardiana* at Yokohama is most probably same as the present plant. So also *Plocanium botryoides* determined by Heydrich (Einige Algen von den Loo-choo- oder Riu Kiu-Inseln p. 103; Kuroiwas No. 57) from Ryukyu specimen sent by Kuroiwa, who put many specimens under my disposal in common with Heydrich, as I judge from the identity of the number denoting his specimens.

Forma uncinatum Okam. n. f.

PL. CII, Fig. 1-2.

Fronds more or less loosely branched with ramuli recurved and uncinated.

Hab.: On rocks, stones etc between tide marks in calm places and in the depth of 3-16 fathoms. Kō-tōsho (Tai-wan),

Correction. Pl. CII: for *Plocanium abnorme* H. et H. var. *uncinatum* read *Pl. abnorme* H. et H. f. *uncinatum*.

Ryukyu; Arikawa in Isl. Goto, Nagasaki, Shimabara and Nomo (Prov. Hizen), Aburatsu (Prov. Hyuga), Mukushima (Prov. Bungo); Provs. Iyo, Shima, Mikawa, Totomi, Suruga, Boshyu, Kadsusa, Iwaki, Rikuzen, Idzumo, Iwami, Oki and Sado. Common along the coasts of the Pacific and the Japan Sea in warmer parts of the country. Fruits:—late spring to summer.

PL. CI. Fig. 1: frond of *Plocamium abnorme* H. et H., $\frac{1}{1}$.—Fig. 2: growing apex of the frond, $\frac{600}{1}$.—Fig. 3: young ramelli, $\frac{390}{1}$.—Fig. 4: portion of an upper branch taking holds of another alga, $\frac{8}{1}$.—Fig. 5: basal rooting portions of the frond; *p*, primary root; *r*, secondary roots; *s*, stones; $\frac{8}{1}$.—Fig. 6: portion of an upper branch showing the central axis and veins, $\frac{5}{1}$.—Fig. 7: portion of fig. 6; *a*, *a*, the central axis of rachis; *b*, vein; $\frac{54}{1}$.—Fig. 8: portion of fig. 7 still highly magd., to show the thickness of cells and pits; *a*, *a*, and *b*, same as fig. 7; $\frac{220}{1}$.—Fig. 9-11: different forms of sporophylls; 9-10: $\frac{22}{1}$; 11: $\frac{54}{1}$.—Fig. 12: cross-section of a sporophyll, $\frac{370}{1}$.—Fig. 13: cystocarp, $\frac{10}{1}$.—Fig. 14: portion of the vertical section of a cystocarp showing the nucleus, $\frac{220}{1}$.

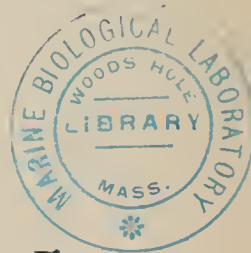
PL. CII., Fig. 1-2. Fig. 1: portion of the frond of *Plocamium abnorme* f. *uncinatum* Okam., $\frac{1}{1}$.—Fig. 2: portion of a branch, $\frac{5}{1}$.

Plocamium (Lamour. 1813) Lyngbye 1819.

ゆ か り 属.

RHODYMENIACEAE. だるす科.

體ハ膜質又ハ稍硬ク扁平ニシテ兩縁ニ薄ク、時トシテハ下部明ニ中肋ヲ存シ、屢々分岐シ、聯基的伸長ヲナス; 枝ハ兩縁ヨリ羽狀ニ分岐シ、一方ノ側ニ2-5條ノ枝ヲ相並テ出シ、之ト交互シテ其對側ヨリ同數ノ枝ヲ出ス; 體ハ細胞組織ニテ成リ、密ニ



相接着シタル圓形—多角形ノ細胞ヨリ成リテ細胞ハ明ニ連絡點ヲ存ス;中軸ハ往々可ナリ細クシテ頂端ニハ關節シタル成長點細胞ヲ存ス;內皮部ハ可ナリ大ナル細胞ニシテ皮層ハ小細胞ヨリ成ル。——四分孢子囊ハ特ニ形成セラレタル小サキ成實枝ニ形成セラレ、成實枝ハ數々分岐シ、時トシテハ群ヲナシテ列シ、各部扁壓ナル枝トナリ、其中軸ニ沿フテ二縱列ニ並ベル環狀ノ孢子ヲ藏ス。囊果ハ通常枝ノ兩緣ニ沿フテ散在シ、無柄又ハ特ニ形成セラレタル小ニシテ分岐セル小枝ノ上ニ單獨ニ又ハ多數ニ形成セラレテ各短キ柄ヲ有シ、羽枝ノ腋ニ集リ生ジ、外方ニ著シク膨出ス。胎座ハ形成セラル、コトナシ;果皮ハ厚ク、外部ハ放射狀ニ、內部ハ重圈狀ニ列セル細胞ヨリ成リ、果孔ナシ、仁ハ單塊又ハ分裂シテ底部ニ存シ、果腔内ニアル網狀ノ絲組織ハ數塊ニ分裂セル小仁ノ爲ニ別離シテ存ス;小仁ハ稍緩ク團集シ、孢子ハ漸次形成セラル。精子細胞ハ體ノ表面ニ群ヲナシテ生ジ、小サキ透明ナル細胞ヨリ成ル。

極メテ種々ナル海ニ産シ、20-30種アリ。模範種ハ *Plocamium coccineum* (Hudson) Lyngb. ニシテ太西洋及太平洋ニ在リ。恐ラクハ柄アル囊果ヲ有スル種類ヲ特ニ別屬トシテ *Thamnophora* C. Ag. トスル方至當ナラン歟。——屬ノ名ハ *Plocamos* (毛ノ總) ヨリ成ル;和名ヨカリハ體色ノ紫紅色ナルヨリ稱ス。

Plocamium abnorme Hook. et Harv.

ヨカリ 岡村 稱.

第 CI 圖 版.

體ハ多數一ヶ所ヨリ叢生シテ球狀ノ叢ヲナシ、下部ノ小枝ノ變形ニヨリテ成リタル絲狀根ヲ以テ小石、介殼、岩石等ニ附着シ、(時ニ上部ノ枝ニテ他體ニ卷絡スルコトアリ、第四圖)、扁平、線狀又ハ絲狀ニシテ薄キ膜質ヲナシ、大抵約7 cm 高シ、然レ



ドモ時ニ5 cmヲ超ヘザルコトアリ時ニ15 cmニ餘ルコトアリ
其幅モ約0.5 mm. ナレドモ、往々體ノ上部甚ダシク細ク、各部輕
ク雁木狀ニ屈曲シ、體ノ下部ヨリ多ク枝ヲ生ズ;或ハ強大ナル、
成長ヲナセルモノニ在リテハ體ノ下部ハ裸出シテ僅ニ枝ノ
殘部ヲ存スルコトアリ。體ノ大サ、各部ノ幅、枝ノ粗密及體
質ハ標品毎ニ甚シキ相違アリ。枝ハ皆兩緣ヨリ出デ、3-4回
複羽狀ヲナシ、互生ニシテ廣開シ、下方ノ枝ハ上方ノモノヨリ
長ク漸次上方ニ短キヲ以テ分枝法ハ稍繖房狀ヲナス、而シテ
枝ハ全體二個ヅ、互生シ、其下位ノモノハ常ニ單條ニシテ、上
位ノモノハ複羽狀ヲナス、而シテ單條ノモノハ2-3 mm. 長ク、全
緣ニシテ鋸齒ナク、基部廣クシテ上端尖リ、多少上方ニ屈曲ス
上部ノ枝ニテハ小枝ハ同ジク互生シ、一側面ヨリ二個(時ニ處
々三個)ヲ出シ之ト交互シテ他ノ側ヨリ同數ノ枝ヲ生ジ、其等
ノ最下位ノモノハ常ニ單條ニシテ、上位ノモノハ其上側ニ一
段小ナル小羽枝ヲ生ズ。——四分孢子囊ハ腋ニ列スル成實枝ニ
形成セラル;成實枝ハ或モノニテハ殆ド單條又ハ僅ニ分岐シ、
他ノモノニテハ複叉狀ヲナシテ多ク分岐シ、或ハ星狀ヲナシ、
其各部ノ枝ハ稍披針狀又ハ線狀ニシテ短キ柄ヲ有シ、環狀ニ
分裂セル孢子ヲ二列ニ藏ス。囊果ハ球狀ニシテ柄ナク、枝ノ
側面ニ坐ス。色ハ美シキ紫紅色ニシテ質ハ薄キ膜質ヲナシ、
強大ナルモノハ稍硬ク、然ラザルモノハ紙ニ附着ス。

備考: 本植物ヲ查定スルニ當リ、予ハ此種ノ正シキ參考標
品ヲ見ルコトヲ得ズ、唯上ニ記シタル書ヲ參考シタルノミ。——
Martens's Preussischen Expedition nach Ost-Asienニ横濱ニテ得タル植
物ヲ *Plocamium affine* トシタルモノハ十中九迄本種ナルベシト
信ズ。又黒岩氏ヨリ Heydrich 氏ニ送リタル琉球ノ標品ニ依

リテ Heydrich 氏ガ *Plocamium botryoides* ト査定シタルモノモ黒岩氏ヨリ予ニ送リタル同植物ノ標品番號ノ Heydrich ニ送リタルモノト同ジキヨリ考フルニ多分同一ノ植物ニシテ本種ニ外ナラザルベシト思惟ス。

*Forma uncinatum*¹ Okam. n. f.

ゆかりノ一形態。

第 CII 圖版 1-2 圖。

枝ハ多少粗クシテ小枝ハ往々鈎狀ヲナシ後方ニ反曲ス。

產地：潮線間ノ岩石ニ附着シ、波浪ノ靜穩ナル處ヲ好ム、又 4-20 尋ノ所ニ在リ(常陸)。紅頭嶼(臺灣)、沖繩島、五島有川(安藤氏)、魚目村、長崎及島原(山崎氏)、油津、豐後無垢島、伊豫、讚岐牛島、志摩、三河、遠江、相模、安房、上總、常陸、磐城、陸前、出雲、石見、隱岐、佐渡。暖部ノ海ニテハ隨所ニ普通ナリ。果實：一晚春ヨリ夏季。

分布：ニウジーランド。

第 CI 圖版。 1: *Plocamium abnorme* H. et H., ゆかり、ノ體、 $\frac{1}{1}$ 。—2: 體ノ成長點、 $\frac{600}{1}$ 。—3: 最末小枝ノ幼者、 $\frac{390}{1}$ 。—4: 上部ノ枝ヲ以テ他ノ海藻ニ卷絡シタルモノ、 $\frac{8}{1}$ 。—5: 體ノ下部ノ根ヲ生ジタルモノ；*a*, 初根；*r*, 後生根；*s*, 小石； $\frac{8}{1}$ 。—6: 上部ノ枝ノ面ヲ削ギテ中軸ト脉トヲ示ス、 $\frac{5}{1}$ 。—7: 第 6 圖ノ一部；*a*, 中軸；*b*, 側脉； $\frac{54}{1}$ 。—8: 第 7 圖ノ一部ヲ更ニ廓大シテ細胞ノ厚ミト連絡點トヲ示ス；指字ハ 7 圖ニ同ジ； $\frac{220}{1}$ 。—9-11: 成實枝ノ種々ナル形態；9-10: $\frac{22}{1}$ ；11: $\frac{54}{1}$ 。—12: 成實枝ノ横斷面、 $\frac{390}{1}$ 。—13: 囊果、 $\frac{10}{1}$ 。—14: 囊果ヲ縦斷シテ仁ヲ示ス、 $\frac{220}{1}$ 。

1) 第 CII 圖版 1-2 圖ノ *Plocamium abnorme* H. et H. *var. uncinatum* トアルハ *Plocamium abnorme* H. et H. *f. uncinatum* ニ訂正ス。尙ゆかりノ變種ヲゆかりノ一形態ト革ム。

第 C II 圖版, 1-2 圖. 1: *Plocamium abnorme* f. *uncinatum* Okam.,
ゆかりノ一ノ形態, $\frac{1}{4}$.—2: 枝ノ一部, $\frac{5}{8}$.

***Plocamium recurvatum* Okam. n. sp.**

Nom. Jap.: *Maki-Yukari*.

PL. CII, Fig. 3-4.

Plants only known in fragmentary states of the size of a few cm. *Fronde* filiform and compressed, irregularly branched in an alternate and patent manner, all furnished with geminate branchlets, of which the lower one simple and subulate, the upper decomposed, and the simple one strongly recurved. By these recurved ramuli the plant seems to entangle to each other. *Fruits* unknown. *Colour* red. *Substance* thin and soft membranaceous.

Hab.: Among algae at the shallow place in tide pools, at Hirakata in Prov. Hitachi; washed ashore at Kobama in Prov. Kadzusa.

PL. CII, Fig. 3-4. Fig. 3: portion of the frond of *Plocamium recurvatum* Okam. n. sp., $\frac{1}{4}$.—Fig. 4: portion of a branch, $\frac{5}{8}$.

***Plocamium recurvatum* Okam. 新種.**

まきゆかり 岡村 稔.

第 CII 圖版, 第 3-4 圖.

體ハ只僅ニ數 cm. ノ破片ノミヲ以テ知ラル. 體ハ絲狀ニシテ扁壓, 不規則ニ互生ニ分岐シ枝ハ廣開ス, 而シテ各部ニ個ヅ、互生セル小枝ヲ有シ, 其下位ノモノハ單條ニシテ纖細ナレドモ上位ノモノハ更ニ分岐ス而シテ其單條ノモノハ甚シク強ク卷曲ス; 此卷曲シタル小枝ヲ以テ此植物ハ互ニ卷絡シ

錯綜スルモノ、如シ。果實ハ未詳。色ハ紅色。質ハ薄クシテ軟ク膜質ナリ。

產地：潮線間ノ潮溜リノ淺所ニ在リテ他ノ海藻ト混ズ；常陸平潟(東氏)；上總小濱。

第CII圖版 3-4圖。3: *Plocamium recurvatum* Okam. n. sp. ノ體ノ一部, $\frac{1}{4}$ 。—4: 枝ノ一部, $\frac{1}{8}$ 。

Spyridia filamentosa (Wulf.) Harv.

Nom. Jap.: *Ubugé-gusa*.

PL. CII, Fig. 5-14.

Spyridia filamentosa (Wulf.) Harv. in *Hook. Br. Fl. II*, p. 336, Harv. Phyc. Brit. t. 46, J. Ag. Sp. II, p. 340, Id. Epicr. p. 268, Id. Florid. Morphol. t. XVI, f. 11-17, Kuetz. Tab. Phyc. Vol. XII, t. 42, f. a-b., Farlow Mar. Alg. New Engl. p. 140, t. X, f. 1, t. XII, f. 2, Ardiss. Phyc. Medit. I, p. 193, Hauck Meeresalg. p. 115, f. 40-41, De Toni. Syll. Alg. IV. p. 1427.—*Fucus filamentosus* Wulf. *Cryp. Aquat.* p. 64.—*Hyphnea charoides* Lamour. *Essai* t. 4, f. 1.—Several species enumerated in Kg. Tab. Phyc. XII, t. 43-44 and 46-49.

Our plants attain the height of 10-20 cm., with the thickness of ca. 1 mm. in thicker portion gradually tapering upwards. Colour whitish flesh-red. (The colour printed in the plate CII does not denote the natural colour of the original plant.)

Hab.: On rocks between tide-marks, often near high tide. Common along the coasts of the Pacific and Japan Sea in warmer parts of the country. Pratas Isl. (Formosa), Ryukyu, Amakusa-Isl., Kobé, Morozaki (Prov. Mikawa), Boshyu, Hakodate, Provs. Iwami, Idzumo, Tango, Wakasa, and Noto; Kaifu (Prov. Yechigo).

PL. CII, Fig. 5-14. Fig. 5: sterile frond of *Spyridia filamentosa* from Ryukyu, $\frac{1}{4}$.—Fig. 6: portion of a branch, $\frac{1}{8}$.—Fig. 7:

apical portion of the frond and younger ramuli, $\frac{390}{1}$.—Fig. 8: longitudinal section of the lower and thicker portion of frond showing the cells of cortical layer, $\frac{91}{1}$.—Fig. 9: cross-section of a thicker branch, $\frac{42}{1}$.—Fig. 10: portion of the cross-section, $\frac{220}{1}$.—Fig. 11: portion of the cross-section of a slenderer branch, $\frac{390}{1}$.—Fig. 12: surface-view of the portion of a thicker branch, $\frac{91}{1}$.—Fig. 13: portion of a branch and a few ramelli, $\frac{54}{1}$.—Fig. 14: portion of fig. 13 showing zonal arrangement of the cortical cells and ramelli, $\frac{175}{1}$.

Spyridia Harvey 1833.

うぶげぐさ屬.

SPYRIDIEAE, CERAMIACEAE. いざす科, うぶげぐさ亞科.

體ハ直立シ、多數ニ側面ヨリ(各方面ヨリ)分枝ス;體ハ圓柱狀ニシテ大ナル細胞ヨリ成レル中軸ヲ有シ皮層ヲ以テ蔽ハル;皮層ハ多少厚ク形成セラレ内方ニハ稍大ナル細胞ヨリ成リ、外方ニハ漸々小形トナリテ全部ヲ蔽ヒ或ハ(纖弱ナル體ニテハ)所々斷續シテ蔽ハレザル所アリ。中軸ヲ形成スル各關節細胞ハ其上端ニ於テ痕跡的ノ短條枝ヲ輪狀ニ生ジ、此モノ互ニ癒着シテ環狀ノ皮層ヲ形成シ、強大ナル枝ニテハ更ニ根樣細胞ヲ生ジ關節細胞ヲ蔽ヒテ下方ニ發達シ相隣レル關節細胞ニ於テ同様ニ形成セラレタル環狀ノ皮層ト接續シ以テ多少厚キ皮部組織ヲ形成ス。成長ニ制限ナキ枝(即チ普通ノ枝)ハ多少纖細ナル有限成長ノ枝(短條枝)ヲ以テ密ニ蔽ハレ、有限枝ハ互生ス。——四分孢子囊ハ三角錐形ニ分裂シ、有限枝ノ環狀皮層ノ表面ニ座ス。精子器ハ有限枝ノ多少幅闊キ環狀皮層部ニ於テ多少班狀ニ集レル群ヲナス。胎原ハ短クナリタル無限枝ノ頂部ノ變形ニヨリテ其枝ノ頂端ニ存ス;即チ其枝ノ實ヲ結ブベキ各關節細胞ハ一個細胞ヨリ成レル二條ノ短條枝

ヲ對生シ、其中ノ一個ハ側面ニ一條ノ胎原枝ヲ形成ス；胎原枝ハ四個細胞ヨリ成リ鈎狀ニ屈曲ス、而シテ兩者ノ短條枝ハ各一個ノ助細胞ヲ生ズ；斯ノ如キ裝置ヲ有スル多數ノ關節細胞ハ中性ナル關節細胞ノ間ニ散在ス、其中性ナル關節細胞ハ枝ノ頂部ノ方ニ常ニ簡單ナル形態ニテ形成セラル、所ナリ；而シテ實ヲ形成スベキ各關節細胞ハ二個ノ相隣リスル中性ノ關節細胞ノ環狀皮層ヲ以テ全ク被包セラル、各胎原ニ於テハ通常只一個ノ胎心ト二個ノ相隣レル助細胞ノミ成熟シ、此カ爲ニ其部ノ皮部ハ局部的發達ヲナシテ甚シク膨出ス；此増厚セル皮部ノ中ニ於テ受胎シタル助細胞ハ仁ヲ形成シ、仁ハ多少密ニ圍集セル小仁ニ分レ、小仁ハ順次ニ形成セラレ、皮部組織中ノ空所ヲ索メテ發達シ、斯クテ其部ノ皮部ヲ膨出セシム、囊果ハ枝ノ側面ニ生ズル成長ノ限ラレタル短キ枝ノ頂部ニ形成セラレ、始メハ二節ヨリ成レドモ後不規則トナリテ三節若クハ數節ヨリ成リ甚シク展ガリタル皮層ノ中ニ順次ニ形成セラレタル數多ノ小仁ヲ藏ス；其之ヲ包ム皮層ノ外層ハ密ナル小細胞ヨリ成リ内方ハ稍大ニシテ弛緩ス、而シテ小仁ハ中軸ノ短クナリタル頂部ヨリ外方ニ互ニ展ガリテ可ナリ緩ク圍集ス、

約12種アリテ諸所暖海ニ産ス、模範種タル *Sp. filamentosa* (Wulf.) Harv., うぶげぐさ、ハ太西洋、太平洋其他ノ暖海ニ産ス、此屬ハ現時多數ノ種ヲ含ムト雖モ囊果ノ精細ナル研究ヲナス時ハ別屬トシテ分タルモノアルベシト云、——屬ノ名ハ *Spyros* (籠) ト *idios* (類似) トヨリ成ル；和名うぶげぐさハ其産毛狀ノ小枝アルニ因メリ、

Spyridia filamentosa (Wulf.) Harv.

うぶげぐさ 岡村 稱

第 CII 圖版、

體ハ絲狀ニシテ吸盤狀根ヲ以テ立ち、時ニ5-7 cm. ヨリ15 cm.

餘ニ達スルコトアリ,下部ノ太サ約 1 mm. アリテ漸次上方ニ細ク,各方面ニ不規則ニ分岐ス。枝ハ直立—廣開シ,多少更ニ枝ヲ分チ,上方ニ細シ。枝及ビ小枝ハ皮層細胞ヲ以テ蔽ハレ,幼部ニ於テハ細長キ絲狀ノ同長ナル皮層細胞稍正シク縦ニ並ビテ環狀ヲナセドモ,老成部ニハ不規則トナリ,各部ヨリ略ボ水平ニ毛狀ノ短條小枝ヲ發シ,殊ニ枝ノ上部ノ方ニハ多シ。短條小枝ハ別ニ一定ノ順序ナク出デ,略ボ無色ナル一列ノ細胞ヨリ成リ,唯節部ニノミ横ニ帶狀ニ小皮層細胞ヲ存ス,而シテ頂端ハ多少尖リ,幼者ハ尖銳ナレドモ老成スルモノハ鈍シ。枝ノ關節ハ其直徑ニ等シキカ又ハ其ヨリモ短ク,稀ニ稍長シ,短條小枝ノ關節ハ往々其直徑ヨリ 2-4 倍長シ。—四分孢子囊ハ短條小枝ニ縦ニ列シ,其上部ノ節々ニハ一個ヅ、ニシテ其下部ノ節々ニハ往々 2-3 個輪生ス。囊果ハ 2-3 ニ分裂シ,少數ノ小枝ヲ以テ圍マル(或ハ裸出ス?)。色ハ淡赤キ煉瓦色ニシテ往々美ナラズ稍白味ヲ帶ビタリ。質ハ軟弱ニシテモサモサトスル氣味アリ,乾燥スルトキハ臺紙ニ附着セズ。

注意: 第 CII 圖版ニ示シタル色ハ植物ノ自然ノ色ニアラズ。

產地: 往々高潮線ニ近キ岩上ニ在リテ潮線間ニ生ズ。暖キ部分ノ海ニ多ク太平洋及日本海沿岸トモアリ。臺灣プラタス島(川上氏),琉球(黒岩氏),天草島,神戸,三河師崎,安房,函館,石見濱田,出雲,丹後,若狹,能登一ノ宮;越後海府(遠藤氏)。

分布: 地中海及アドリアチック海,大西洋,(歐洲及米國),紅海,印度洋。

第 CII 圖版, 5-14 圖。 5: *Spyridia filamentosa* (Wulf.) Harv., うぶげぐさノ實ナキ體(琉球産), $\frac{1}{1}$ 。—6: 枝ノ一部, $\frac{42}{1}$ 。—7: 體ノ頂端ト若キ小枝, $\frac{320}{1}$ 。—8: 體ノ下部ノ太キ部分ノ縦斷面ニシテ皮部ノ組織ヲ示ス, $\frac{91}{1}$ 。—9: 太キ枝ノ横斷面, $\frac{42}{1}$ 。—10: 横斷面ノ一部, $\frac{220}{1}$ 。—11:

細キ枝ノ横斷面ノ一部, $\frac{390}{1}$.—12: 太キ枝ノ表面, $\frac{91}{1}$.—13: 若キ枝ノ一部ト短條小枝, $\frac{54}{1}$.—14: 第13圖ノ一部ヲ廓大シテ若キ枝ノ皮層ト短條小枝トヲ示ス, $\frac{175}{1}$.

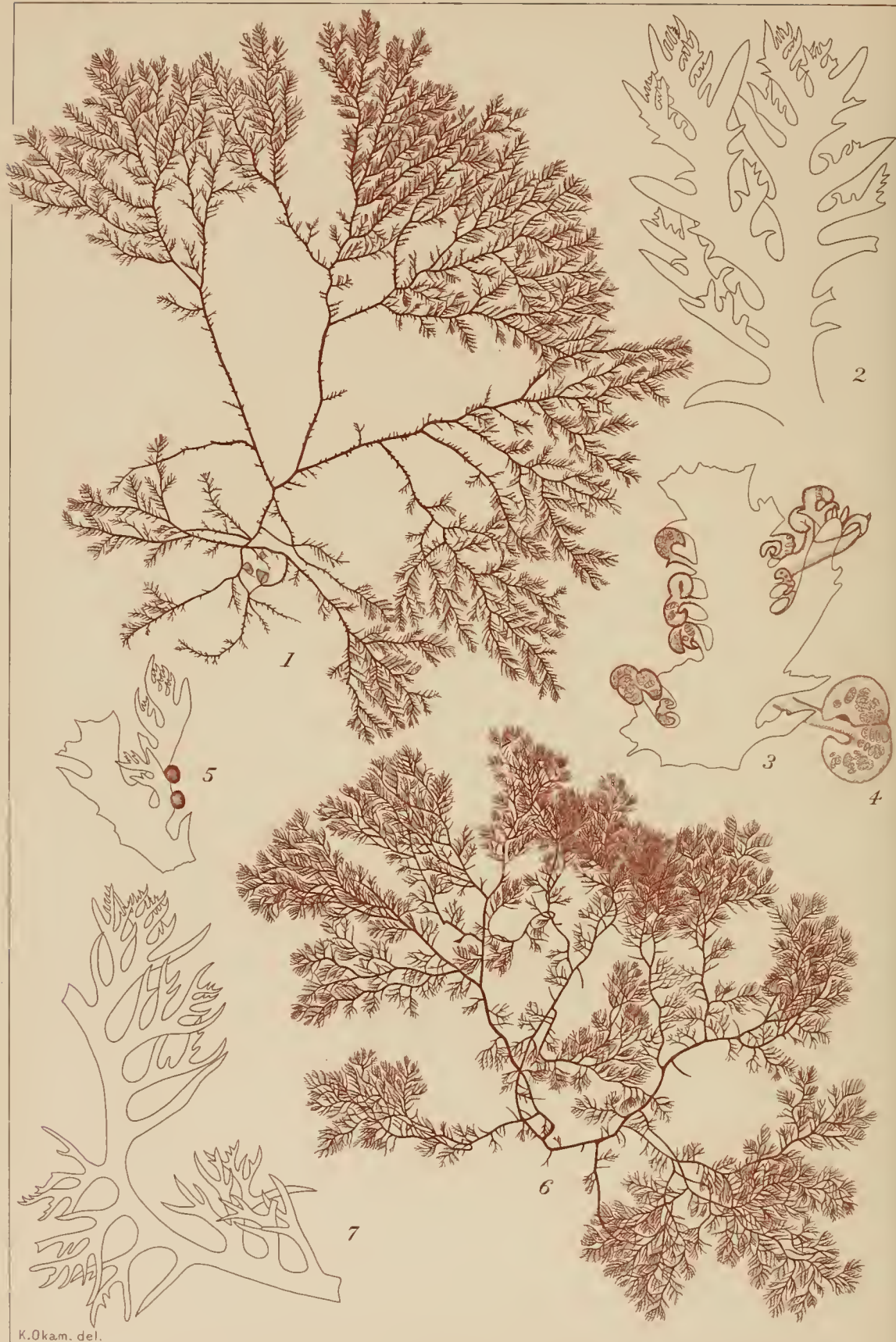
***Plocamium oviforme* Okam.**

Nom. Jap.: *Hime-Yukari*.

PL. CIII, Fig. 1-5.

Plocamium ovicornis Okam. Contrib. Mar. Algae of Japan II (Bot. Magaz. Tokyo Vol. X, 1896), p. 23, t. III, f. 3-4.—*Pl. oviforme* Okam.; De Toni Syll. Alg. IV, p. 590; Nuova Notarisia 1897, p. 26.

“*Fronde* linear, flat, ecostated, thin membranaceous, 6-10 cm. high, 0.5-0.8 mm. broad. Ramifications are between alternate and subdichotomous with main branches set widely dichotomous, furnished with short patent alternate branches and beautifully pectinato-pinnated along upper branches, leaving the lower portion naked, except for a few decayed pinnae. Pinnae 3-5, usually 4, the lowest one simple or compound, sometimes slightly bent backward, the higher in series pinnulated in the usual manner. Secondary pinnae and pinnulae arise along the side opposite to that, where the normal ones stand. They are subulate or spinose, and shorter than the normal ones, and are either simple or similarly pinnulated. They do not correspond in number to the normal ones, and are not definite in arrangement, but are mostly alternate with the normal ones.—*Stichidia* transformed from pinnules of both normal and opposite pinnae and are thus seriated along both margins of rachis. They are swollen and usually 2-lobed on a common slender pedicel and are recurved appearing like the letter *r* or the horn of a sheep; they are sometimes single, the one branch being suppressed, or one remains simple, while the other is



K.Okam. del.

5 1 7 6 3 2 4
Plocamium oviforme Okam. ひめゆかり Fig.1-5.
Plocamium leptophyllum Kuetz. var. *flexuosum* J.Ag.
 ほそゆかり Fig. 6-7.

again 2-lobed in a similar manner. Tetraspores are seen to be arranged in a single row, when viewed from the side, but when viewed from above, they are seen to be arranged in a double row. *Cystocarps* globular and sessile. *Colour* beautiful-red."—*Okam. l. c.*

Hab.: On the shell of *Haliotis gigantia* from a depth of 20 fathoms at Nemoto in Boshyu; Enoshima (Prov. Sagami), Aburatsu (Prov. Hyuga). Fruits :—late in summer.

PL. CIII, Fig. 1-5. Fig. 1: sterile frond of *Plocamium oviforme* Okam., $\frac{1}{1}$.—Fig. 2: terminal portion of the sterile frond, $\frac{37}{1}$.—Fig. 3: portion of a branch bearing sporophylls, $\frac{37}{1}$.—Fig. 4: one of sporophylls, $\frac{85}{1}$.—Fig. 5: portion of a branch bearing cystocarps, slightly magd.

Plocamium oviforme Okam.

ひめゆかり 岡村 稱

第 CIII 圖版.

體ハ細キ線狀ニシテ扁平, 中肋ナク, 薄キ膜質ニシテ, 6-10 cm. 高ク, 幅 0.5-0.8 mm. アリ. 分枝法ハ互生ト稍叉狀トノ間ニシテ主枝ハ叉狀ニ廣開シ, 短クシテ同シク廣開セル枝ヲ互生ス, 而シテ上部ノ枝ハ美麗ニ羽狀ヲナスコト恰モ櫛ノ齒ノ如ク, 主枝又ハ莖ノ下部ハ僅ニ存セル枝ノ殘部ヲ存スルノミ. 羽枝ハ 3-5, 通常 4ニシテ其最下部ノモノハ單條又ハ分枝シ, 時トシテハ輕ク後方ニ屈曲ス, 而シテ其上部ノモノハ此屬ニ普通ナル如ク正シク小羽枝ヲ發ス. 後生の羽枝及小羽枝ハ常態ノモノ、出ル側ト反對ノ側ヨリ出ヅ. 此等後生のノモノハ先端尖銳ニシテ常態ノモノヨリ短ク, 單條ナルコトアリ又常態ノモノト同様ニ小羽枝ヲ存スルコトアリ. 其等後生のノモノノ數ハ常態ノモノト必ズシモ同數ナラズ又其配置モ必ズシモ一定ナラザレドモ概テ常態ノモノト互生ス.—成實枝

ハ常態ノ羽枝及之ト對生セル後生のモノ、小羽枝ヨリ變形シ、枝ノ兩側ニ列ス；而シテ一個ノ細キ短キ柄ヲ有シテ其上部少シク膨レ通常ニ分レ其各枝反曲スルコト恰モアト云フ文字ノ如ク又山羊ノ角ノ如シ；時ニ其枝ノ一ツ發生セズシテ單條ナルコトアリ或ハ其一ハ單條ニシテ他ノ一ハ同シク羊角ノ如クニ分ル、コトアリ；四分胞子囊ハ成實枝ノ側面ヨリ見ル時ハ一列ヲナセドモ上ヨリ見レバ二列ヲナス。 囊果ハ球狀ニシテ柄ナク枝ノ縁邊ニ座ス。 色ハ美シキ鮮紅色ニシテ質ハ粘質ニ乏シク紙ニ附着スルコト不充分ナリ。

產地：安房根本ニ於テ20尋ノ深所ヨリ獲タルあはび殻上ニ得タリ。 江ノ島(相模),日向油津。 果實：一晩夏(九,十月頃)。

第 CIII 圖版. 1-5 圖。 1: *Plocamium oviforme* Okam., ひめゆかり, ノ體, $\frac{1}{1}$.—2: 枝ノ上部, $\frac{37}{1}$.—3: 成實枝ヲ有スル枝ノ一部, $\frac{37}{1}$.—4: 成實枝, $\frac{85}{1}$.—5: 囊果ヲ有スル枝, 廓大。

Plocamium leptophyllum Kuetz. var. *flexuosum* J. Ag.

Nom. Jap.: *Hoso-Yukari*.

PL. CIII, Fig. 6-7.

Plocamium leptophyllum var. *flexuosum* J. Ag. Sp. II, p. 396; Id. Epicr. p. 339; De Toni Syll. Alg. IV, p. 589.—*Pl. coccineum* var. *flexuosum* Harv. Ner. austr. p. 124, t. 43, f. 2.

Hab.: Goto Isl., Amakusa Isl., Nagasaki, Cape Nomo, Karatsu, Provs. Shima, Owari and Nagato.

PL. CIII, Fig. 6-7. Fig. 6: frond of *Plocamium leptophyllum* var. *flexuosum* J. Ag., $\frac{1}{1}$.—Fig. 7: portion of the frond, $\frac{8}{1}$.





Dictyota p-tens Kuetz. おもんあみち.

Plocamium leptophyllum Kuetz. var. *flexuosum* J. Ag.

ほそゆかり 岡村 稱

第 CIII 圖版, 6-7 圖.

體ハ細キ線狀ニシテ, 扁壓, 中肋ナク, 屢々羽狀ニ分岐シ, 羽枝ハ3-5個ヅ、互生シ總テ極メテ細クシテ殆ド絲ノ如ク, 基部廣クシテ上部細尖ナリ; 各側ヨリ出ル枝ノ最下位ノモノハ單條ニシテ時ニ後方ニ反曲シ, 其甚シキニ至テハ蕨手狀ヲナスコトアリト云フ, 而シテ上位ノ最末小枝ハ稍直立シテ細尖, 全縁ナリ; 枝ハ甚シク雁木狀ニ屈曲ス。——成實枝ハ枝ノ縁邊ニ列シ, 稍長キ柄アリテ披針狀ヲナシ稍單條ニシテ其尖リタル頂端下ニ一列若クハ二列相對シテ四分孢子ヲ藏ス。

產地: 五島有川(安藤氏), 牛深, 野釜島(天草島), 長崎, 島原, 野母, 唐津, 志洲濱島及荒島, 尾張篠島及師崎, 山口縣(中ノ關?), 能登羽咋ノモノハ *Plocamium abnorme* ト見分ケ難キモノ多シ。

分布: タスマニア及ニウホルランド。

第 CIII 圖版, 6-7 圖. 6: *Plocamium leptophyllum* var. *flexuosum* J. Ag., ほそゆかり, ノ體, $\frac{1}{1}$.—7: 枝ノ一部, $\frac{8}{1}$.

Dictyota patens J. Ag.

Nom. Jap.: *Komon-Amidzi*.

PL. CIV.

Dictyota patens J. Ag. Till Alg. Syst. V, p. 93; Id. Anal. Algol. Cont. I, p. 68; De Toni Syll. Alg. Vol. III, p. 264.

Fronds membranaceous, dichotomo-flabellate, attached to shells, gravels, rocks etc by the lower portions of fronds, slightly decumbent, 7-13 cm. high, with broadly linear segments, 0.4-1.0 mm. broad,

bifid or emarginate at apices, standing from roundish erecto-patent axils furnished with minute teeth or processes along both margins, which often grow up into proliferous leaflets.—*Sporangia* (isolated) and oogonia densely scattered over both surfaces of the frond. In living state, sub-concentric zones of iridescence are often observed.

Hab.: On rocks between tide marks near low tide in warmer parts of the country. Okinawa Isl. (Ryukyu), Mogi and Cape Nomo near Nagasaki, Hama-shima (Prov. Shima), Kotsubo (Prov. Sagami). Fruits :—summer.

Remarks: On referring our plants to the present species I have seen neither illustrations nor reliable specimens but references quoted above.

PL. CIV. Fig. 1: tetrasporic frond of *Dictyota patens* J. Ag., $\frac{1}{4}$.—Fig. 2: marginal teeth near terminal portion of a branch, $\frac{5.4}{1}$.—Fig. 3: cross-section of frond, $\frac{4.2}{1}$.—Fig. 4: root-fibres emitted from the surface of the lower attaching portion of frond, $\frac{17.5}{1}$.—Fig. 5: root-fibres, $\frac{9.1}{1}$.—Fig. 6: portion of branch bearing tetrasporangia, $\frac{1}{4}$.—Fig. 7: portion of frond, showing the cells of the cortex and inner layer and tetrasporangia, $\frac{5.4}{1}$.—Fig. 8: portion of the frond bearing oosporangia, $\frac{1}{4}$.—Fig. 9: surface-view of frond bearing oosporic sori; *a, a*, those on the under surface, $\frac{1.2}{1}$.—Fig. 10: oosporic sori, $\frac{5.4}{1}$.—Fig. 11: vertical section of an oosporic sorus, $\frac{17.5}{1}$.

Dictyota Lamour. 1809.

あ み ち ぐ さ 属.

DICTYOTACEAE あ み ち ぐ さ 科.

體ハ扁平ニシテ概テ叉狀ニ分岐シ、中肋ナシ、二層ノ細胞ヨリ成ル;内層ハ大ナル無色ノ長方形ノ細胞ノ一層(規則トシテ)ヨリ成リ、皮層ハ小ナル正方形又ハ長方形ノ色素ヲ含メル

一層ノ細胞ヨリ成ル。四分胞子囊ハ球狀ニシテ十字様ニ分裂シ、皮層細胞ヨリ變成シテ外部ニ存シ、體ノ表面ニ個々散在シ、特ニ此種ノ生殖細胞ノミヲ生ズル體ニ生ズ。卵細胞ハ體ノ兩面ニ斑點狀ノ群ヲ爲シテ散在シ、キユチクラ層ヲ以テ蔽ハレ、皮層細胞ヨリ形成セラル。精子器ハ皮層細胞ヨリ變成シ其各細胞ハ體ノ表面ニ直角ニ伸長シテ無數ノ精子細胞ニ分レタルモノ相集リテ無色ノ斑點狀ノ群ヲナシ、群ノ周圍ヲ圍繞セル中性ノ細胞アリテ恰モ苞ノ如ク成レリ。精子細胞ハ球狀ニシテ長キ螺旋狀ヲナセル一條ノ纖毛ヲ有ス。

30-40ノ種類アリテ概テ諸所ノ暖海ニ産ス。模範種ハ *Dictyota dichotoma*, あみぢぐさ, ニシテ太西洋及太平洋等ニ産ス。——屬ノ名ハ *Dictyotos* (網狀)ヨリ成ル; 即チ體ノ内部ノ組織ヲ表面ヨリ透視シタル形ニヨル。和名モ亦此義ニ取レリ。

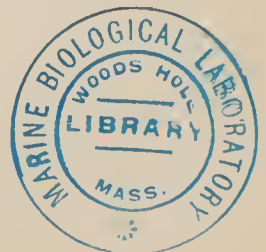
Dictyota patens J. Ag.

こもんあみぢ 岡村 稱

第 CIV 圖版.

體ハ膜質ニシテ、又狀ニ分岐シ扇狀ヲナス; 體ノ下部ヲ以テ介殼、岩石等ニ附着シ、下部稍傾臥シ上部ハ直立ス; 7-13 cm. 高ク、各部ハ幅濶キ線狀ニシテ 0.5-1.0 mm. 濶ク、頂端ニ裂シ又ハ淺ク窪ミ、圓クシテ稍狭キ腋ヲ以テ立ち、兩縁ニ微細ナル齒又ハ突起ヲ有ス; 此突起ハ後往々小サキ葉ニ伸長ス。——四分胞子囊ハ個々ニシテ體ノ兩面ニ散在ス。卵細胞ハ稍大ナル點狀ヲナシテ兩面ニ散在ス。生活スル體ニ於テハ往々稍重團狀ノ閃光ヲ認ムルコトアリ。

產地: 低潮線ニ近ク潮線間ニ於ケル岩石ニ附着シ、暖キ部分ニ在リ。沖繩(安藤氏)、茂木(大石氏)、野母岬、志摩濱島(東氏)、相洲小坪(多湖氏)。果實: 一夏季。



分布：熱帶ノ海ニ産ス。 太西洋(セントトーマス島), 太平洋(フレンドリー島)。

備考：本植物ヲ此種ニ充ルニ當テハ只參考書ニ掲ゲラレタル記載ノミニ依リタルニテ別ニ信據スベキ標本又ハ圖說等ヲ見タルニ非ズ。

第 CIV 圖版. 1: *Dictyota patens* J. Ag., こもんあみち, ノ四分胞子囊ヲ有スル體, $\frac{1}{1}$.—2: 枝ノ上部ニ近キ縁邊ノ鋸齒, $\frac{5.4}{1}$.—3: 體ノ横斷面, $\frac{4.2}{1}$.—4: 體ノ下部ノ表面ヨリ出タル根毛, $\frac{17.5}{1}$.—5: 根毛, $\frac{9.1}{1}$.—6: 四分胞子囊ヲ有スル枝, $\frac{1}{1}$.—7: 四分胞子囊ヲ有スル體ノ表面; 上皮細胞層ノ一部ト内部細胞トヲ示ス, $\frac{5.4}{1}$.—8: 卵細胞ヲ有スル體ノ一部, $\frac{1}{1}$.—9: 卵細胞群ヲ有スル體ノ表面; a, a, 裏面ノモノ; $\frac{1.2}{1}$.—10: 卵細胞群, $\frac{5.4}{1}$.—11: 同上ノ縦斷面, $\frac{17.5}{1}$.

***Caulerpa Freycinetii* var. *typica* f. *lata* Weber van Bosse. ***

Nom. Jap.: *Yore-Zuta*.

PL. CV, Fig. 1-3.

Caulerpa Freycinetii var. *typica* f. *lata*; Weber van Bosse Monogr. des Caulerpes p. 313, Pl. XXV, Fig. 4-5.—*C. Freycinetii* Ag. Sp. p. 446; Kuetz. Tav. Phyc IV, Taf. 4, Fig. 3; J. Ag. Till Alg. Syst. I, p. 20; De Toni Syll. Alg. I, p. 458.—*C. Freycinetii* var. *serrulata* Zanardini, Pl. in Mar. Rubr. coll. p. 183.

Hab.: Ryukyu.

* Correction: PL. CV, Fig. 1-3; for *Caulerpa Freycinetii* Ag. read *Caulerpa Freycinetii* var. *typica* f. *lata* Weber van Bosse.



K. Okam. del.

Caulerpa Freycinetii Ag. よれづた, Fig. 1-3
Caulerpa Freycinetii Ag. var. *de Boryana* Weber.
f. occidentalis Weber. さいはいづた. Fig. 4-6.

var. *de Boryana* f. *occidentalis* Weber van Bosse.

Nom. Jap.: *Suihai-Zuta*.

PL. CV, Fig. 4-6.

Caulerpa Freycinetii var. *de Boryana* f. *occidentalis* Weber van Bosse Monogr. des Caulerpes p. 315, Pl. XXV, Fig. 10-11.—*Caulerpa Boryana* J. Ag. Till Alg. Syst. I, p. 20; De Toni Syll. Alg. I, p. 459.—*C. Freycinetii* Bory Voy. Coq. Pl. 22, f. 2.—*C. najadiformis* Kuetz. Tab. Phyc. Vol. VII, t. 4, a.

Hab.: Ryukyu

PL. CV, Fig. 1-3. Fig. 1: frond of *Caulerpa Freycinetii* var. *typica* f. *lata* Weber v. Bosse, 1.—Fig. 2-3: portions of a frond, $\frac{5}{1}$.

PL. CV, Fig. 4-6. Fig. 4: frond of *Caulerpa Freycinetii* var. *de Boryana* f. *occidentalis* Weber v. Bosse, 1.—Fig. 5: portion of the frond, $\frac{7}{1}$.—Fig. 6: marginal tooth, $\frac{37}{1}$.

Caulerpa Lamour. 1809.

いわづた 屬.

CAULERPACEAE. いわづた 科

體ハ明ニ根ト莖ト葉トノ區別ヲ有ス; 莖ハ分岐シテ匍匐シ、其下側面ヨリ稍長キ根ヲ出シ、其上側面ヨリ單條又ハ分枝セル枝ヲ出シ、枝ハ種々ノ形狀ヲナセル葉ヲ有スルアリ或ハ之ヲ欠ク; 葉ハ決シテ葉面ニ孔ヲ穿チタル如クナリテ網狀ヲナスコトナシ。生殖ハ體ノ一部切レテ脫離スルニ依ル。

約70種アリテ熱帶及亞熱帶ノ海ニ産ス; 本邦ニモ南方ノ諸所ニハ種々ノ種類アレドモ、其内一種ハ暖流ニ隨テ太平洋ハ磐城邊マデ日本海ハ羽後鼠ケ關マデ産スルモノアリ。——屬ノ名ハ *caulos* (莖) ト *erpo* (匍匐ス) トヨリ成ル; 和名モ亦此義ニ依レリ。

Caulerpa Freycinetii var. *typica* f. *lata* Weber van Bosse.*

よ れ づ た 岡 村 稱.

第 CV 圖版, 1-3 圖.

體ハ平滑ナル(毛其他ノ如キ附屬物ナキヲ云)匍匐莖ヨリ立チ,複叉狀ニ分岐シ,稍束狀ニ集リ,5-8 cm. 高ク,短キ柄ヲ有ス;柄ハ下部圓柱狀ニシテ漸ク扁圓トナル;枝ハ稍螺旋狀ニ捻レ約 2 cm. 程長ク,所々著シククビレテ其他ハ開展シ,其クビレタル部分ノ外側ハ鋸齒ヲ存シ,内側ハ鋸齒ナク,展ガリタル部分ハ往々兩縁ニ鋸齒ヲ存シ,鋸齒ハ稍隔ル;其間隔ハ相隣スル二齒ノ間ノ距離ハ其部ノ枝ノ幅ト略ボ等シク,鋸齒自身ノ長サハ其部ノ枝ノ幅ノ半分ト略同シキカ或ハ長シ;而シテ齒ハ稍鈍頭ニシテ微突頭狀ヲナシ或ハ稍乳頭狀ヲナス. 色ハ深綠色ナリ;紙ニ附着セズ.

產地: 琉球(黒岩氏).

分布: 紅海,マリアナ島,グアデループ,フレンドリー島,ズンバワ島.

var. *de Boryana* f. *occidentalis*

Weber van Bosse.

さいはいづた 岡村 稱.

第 CV 圖版, 4-6 圖.

體ハ稍長キ柄ヲ有シ,柄ハ圓柱狀又ハ扁圓ニシテ葉ハ複叉狀ヲナシ,線狀ニシテ扁平,鋸齒ヲ存シ,捻レズ;齒ハ小ニシテ往々高サヨリモ濶シ.

*) 第 CV 圖版, 1-3 圖: *Caulerpa Freycinetii* Ag. ハ *Caulerpa Freycinetii* var. *typica* f. *lata* Weber v. Bosse ト訂正ス.

產地：琉球(黒岩氏)。

分布：グアドループ。

第 CV 圖版, 1-3 圖. 1: *Caulerpa Freycinetii* var. *typica* f. *lata* Weber v. Bosse, よれづた, ノ體, 1.—2-3: 體ノ一部, $\frac{5}{1}$.

第 CV 圖版, 4-6 圖. 4: *Caulerpa Freycinetii* var. *de Boryana* f. *occidentalis* Weber v. Bosse ノ體, 1.—5: 體ノ一部, 7.—6: 鋸齒, $\frac{37}{1}$.

Corrigenda.

PL. CII, Fig. 1-2: for *Plocamium abnorme* H. et H. var. *uncinatum* read *Pl. abnorme* H. et H. f. *uncinatum*.

PL. CIV: for *Dictyota patens* Kuetz. read *Dictyota patens* J. Ag.

PL. CV: for *Caulerpa Freycinetii* Ag. read *Caulerpa Freycinetii* var. *typica* f. *lata* Weber van Bosse.

In the Icones Vol. II, No. 10, p. 184, PL. C, Fig. 7-11 I published an *Acetabularian* plant, as a new sp. struck by its smallest size, under the name of *Acetabularia minutissima* Okam.; but more afterward I came to doubt its specific value and by closer examination I found it to be identical with *Acetabularia polyphysoides* Crouan; and so it must be reduced to a synonym of

ACETABULARIA POLYPHYSOIDES Crouan.

Acetabularia polyphysoides Crouan; Solms. Monograph of the Acetabularieae p. 29, pl. iv, figs. 2, 6; Howe Phycological Studies IV: the genus *Neomeris* and notes on other Siphonales p. 92, pl. 6, f. 16-20, pl. 7, f. 5-9.

Our plants (only few in number) have rather thickly encrusted disk which is very shallow and though inter-radial lime-mass is shorter

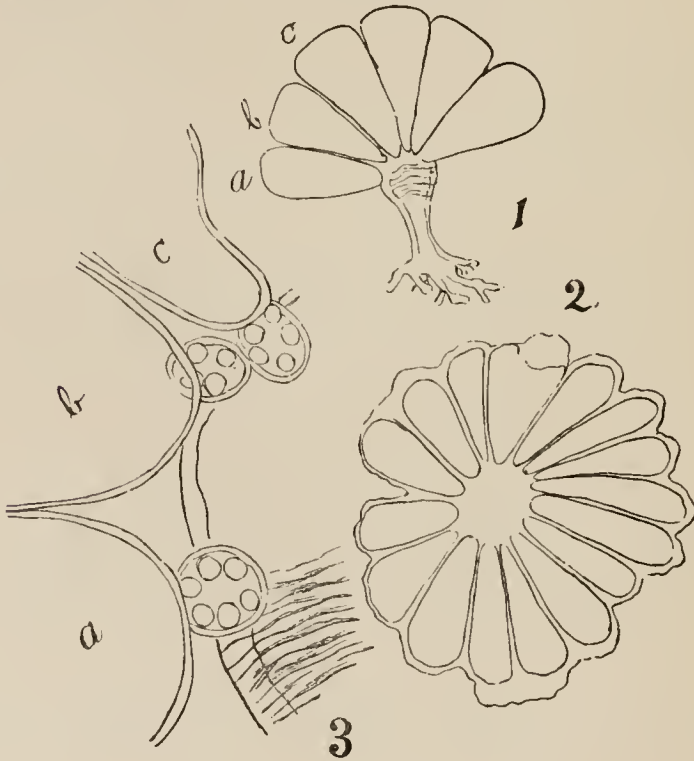
than the rays, their free margins are more or less encrusted (wood-cut fig. 2). Sporangia (rays) 12-16 (mostly 16) varying from inflated-obovoid and twice or a little more times as long as broad to clavato-cylindrical and thrice or a little more times as long as the greatest width; coronal processes knob-like, oval or a little longer in radial direction, $67 \times 75\mu$ (in one which I have measured), each bearing (4?) 5-6 hair-scars arranged in elliptical manner; hypopeltal process wanting; aplanospores globose or ovoid or somewhat elliptical (in one I have measured 90μ in diameter); stipe usually much corrugated and enlarged in the upper part, measuring 0.5 mm. in the thickest part.

Explanation of the wood-cut-figures.

Fig. 1 : portion of rays and the stem, $\frac{10}{1}$.

Fig. 2 : disk viewed from above, calcified, $\frac{15}{1}$.

Fig. 3 : sporangia *a*, *b*, *c* of fig. 1, and portion of the corrugated stem showing hair-scars on coronal processes, $\frac{140}{1}$.



正 誤

第 CII 圖版: *Plocamium abnorme* H. et H. *var. uncinatum* ハ PL.
abnorme H. et H. *f. uncinatum* ノ誤.

同 圖: ヨカリノ變種ハヨカリノ一形態ト訂正ス.

第 CIV 圖版: *Dictyota patens* Kuetz. ハ *Dictyota patens* J. Ag. ノ誤.

第 CV 圖版: *Caulerpa Freycinetii* Ag. ハ *Caulerpa Freycinetii* var.
typica f. *lata* Weber van Bosse ノ誤.

本圖譜第二卷,第十冊,第184頁,第C圖版,7-11圖ニ於テ予ハ
Acetabularia minutissima Okam. ノ名ヲ以テ一極メテ小ナル *Aceta-*
bularia ヲ發表シタリ;當時予ハ其形ノ極メテ小ナルガ爲ニ確
ニ一新種ナリト思ヒタレドモ後漸ク之ヲ疑ヘルヲ以テ更ニ
之ヲ研究シタルニ果シテ其 *Acetabularia polyphysoides* Crouan ナル
コトヲ知レリ;因テ予ノ命シタル學名ハ其異稱トスル外アラ
ザルヲ以テ茲ニ此ヲ下ノ如ク訂正ス.

ACETABULARIA POLYPHYSOIDES Crouan.

體ハ稍厚ク石灰質ヲ被リ,傘ハ甚ダ淺クシテ囊枝ノ間ノ石
灰ハ囊枝ヨリモ短カケレドモ,囊枝ノ頂端ハ多少石灰質ヲ以
テ蔽ハル. 子囊(即チ囊枝)ハ 12-16 (概チ 16) ニシテ膨レタル
倒卵形ヨリ棍棒狀—圓柱狀ニ變ジ,倒卵形ノモノハ其長サ幅
ノ二倍又ハ二倍餘ニシテ棍棒狀ノモノハ其廣キ部分ノ三倍
又ハ三倍餘長シ. 囊枝ノ基部ノ莖ト連ナル所ハ上方ニ少シ
ク膨レテ上方膨起部 (*corona superior*) ト成リ其部ハ瘤狀ニシテ
卵圓形又ハ傘ノ半径ノ方向ニ少シク長ク,長サ 75μ 幅 67μ (予
ノ計算シタル一個ノモノニテ) アリ,各 5-6 個ノ毛ノ落チタル痕
ヲ有シ其痕跡ハ楕圓狀ニ配列ス;下方膨起部 (*corona inferior*) ハ
之ヲ欠ク;「アブラノ」胞子ハ球狀,卵圓形又ハ稍楕圓形ナリ(予

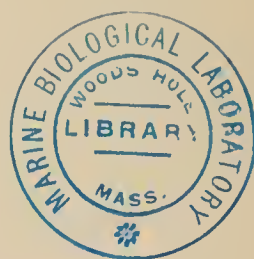
ノ計リタル—ハ 90μ ノ直徑アリ); 莖ハ上部通常皺ヲ有シテ
膨レ約 0.5 mm . ノ太サアリ.

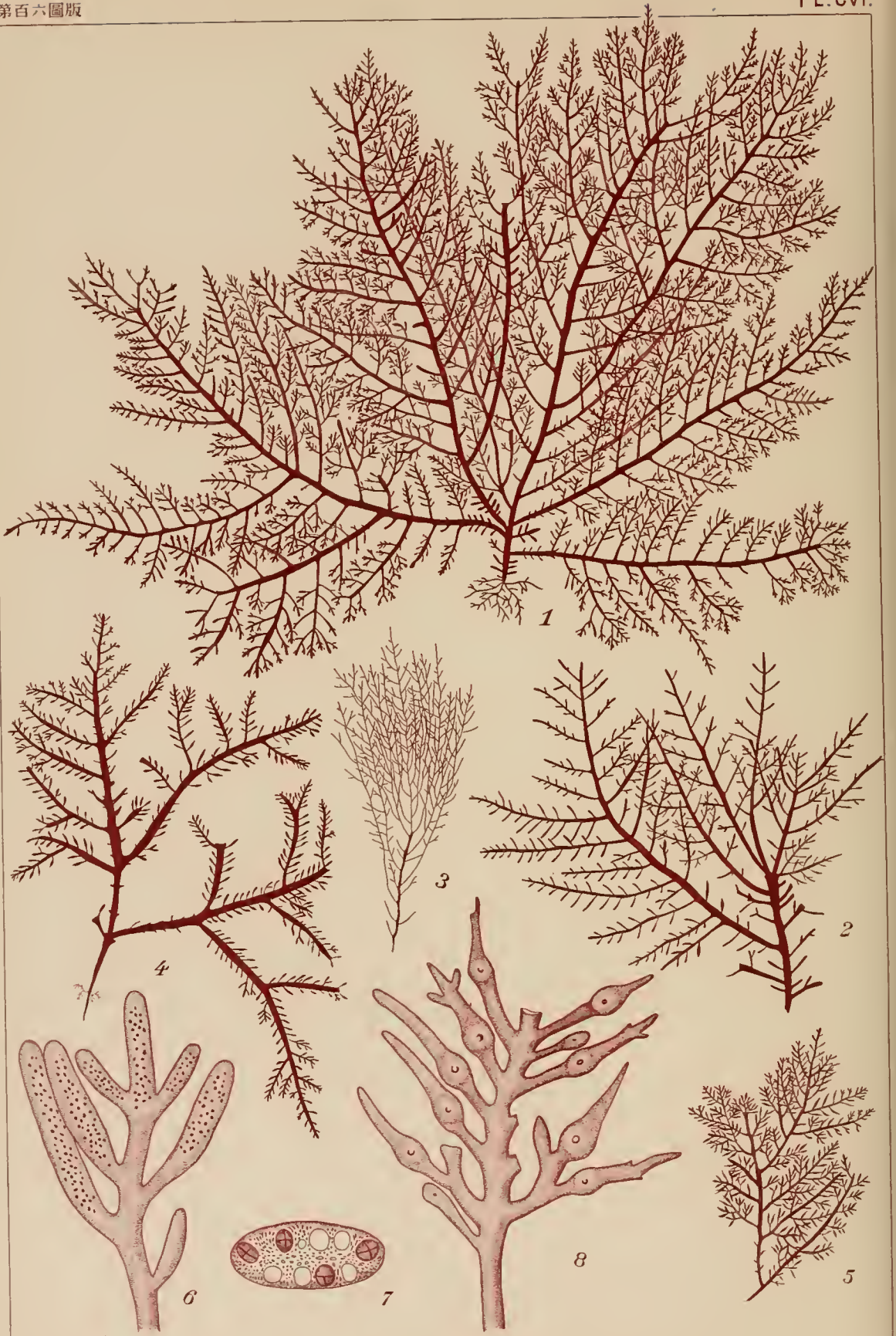
木 版 圖 ノ 解.

1: 傘ノ一部ト莖トヲ横ヨリ見タルモノ, $\frac{10}{1}$.

2: 石灰質ノマヽナル傘ヲ上ヨリ見タルモノ, $\frac{15}{1}$.

3: I 圖ノ a, b, c ト記シタル囊枝及莖ノ皺アル部分ヲ示シ
囊枝ノ柄ノ如クナレル上方膨起部ニ毛ノ痕跡 (小サキ圓形ノ
モノ) アルヲ示ス, $\frac{140}{1}$.





K. Okam del.

4 6

7

3

1 8

5 2

Gelidium Amansii Lamour. てんぐき

Gelidium Amansii Lamour.

Nom. Jap.: *Tengusa*.

PL. CVI.

Gelidium Amansii Lamour. in Kütz. Tav. Phyc. XVIII, p. 16, t. 44, Id. Sp. Alg. p. 766; Martens Preus. Exped. Bot. p. 18; Collins, Holden and Setchell Phycotheca Boreal. America. No. 585. — *Fucus Amansii* Lamour. Diss. p. 48, Taf. 26, f. 2-5. — *Sphaerococcus cartilagineus* β . *setaceus* Ag. after Martens l. c. — *Gelidium cartilagineum* Harvey in Perry's Reise II, p. 331. *

*Fronde*s cæspitose, filiform or linear, rising from fibrous roots, ancipito-compressed or almost flat, densely branched from near the base in 3-4 times pinnate manner. Branches alternate, opposite or irregularly set, patent, often slightly flexuose; the lower ones are longer than the upper, becoming gradually shorter above and similarly loaded with lesser sorts of branches in turn. Ramuli short and pointed and often furnished with ramelli. Plants attain the height of 10-25 cm, mostly 10-15, with the breadth of 0.5-2 mm. *Tetrasporangia* are produced in an elongated or roundish oblong sorus formed on the upper portion of a ramulus. *Cystocarp* swollen beneath the apex of a ramulus either terminated with a simple or more or less branched apical portion of the ramulus. *Colour* shining purplish red. *Substance* cartilaginous, somewhat membranaceous in thinner and broader ones; the fronds do not adhere to paper in drying.

Hab.: On the rocks and stones extending from tidal marks to the depths of 14 fathoms in the Pacific coast and to about 5 fathoms in the Japan Sea. Keerun (Taiwan); from the east and west coasts of Kyushyu to Kinkwasan; coast of the Japan Sea; western coast of Hokkaido. In Chosen at Saishūtu, Fusan, Kokuzanto (14

fathoms), Urgan, Seikoshin. Fruits: spring to summer.

Length of the frond, breadth of the branches, shape of the tetrasporic ramuli, habit of the branches and substance of frond much vary according to specimens. Branches are usually very patent, while in others more erect; in some, breadth of the branches vary according to portions, and broader segments suddenly taper to filiform ones. The variation of breadth of the branches may in some measures be seen from the illustrations given. Tetrasporic sori are mostly formed in spatulately expanded ramuli, while in others in smaller roundish knob-like swollen apices of ramuli. Substance is firmer in thicker or subcylindrical and slenderer frond, and is somewhat membranaceous in thinner and broader ones. The variation of substance originates from the differences of the localities of plants. The present plant grows in more or less sheltered places extending from the midtide to the depths of 5-14 fathoms and those growing in calm places are softer than those growing in the place where tidal currents are in a good flow. As the plant has a very wide distribution in this country the general aspect often so much differs that one may take some of the specimens for a distinct species.

The alga is perennial and during one year it makes the growth of 10-13 cm., though the rate of growth differs according to the conditions of the environments. In this country the present seaweed is largely used as the material of "Kanten" that is well known seaweed jelly.

PL. CVI. Fig. 1: sterile typical frond of *Gelidium Amansii* Lamour., $\frac{1}{1}$.—Fig. 2: portion of frond, $\frac{1}{1}$.—Fig. 3: portion of sterile frond having filiform branches, $\frac{1}{1}$.—Fig. 4: portion of tetrasporic frond having broader segments, $\frac{1}{1}$.—Fig. 5: cystocarpic branch, $\frac{1}{1}$.—Fig. 6: tetrasporic ramuli, $\frac{1}{1}^5$.—Fig. 7: cross-section of a tetrasporic ramulus, $\frac{9}{1}$.—Fig. 8: ramuli bearing cystocarps, $\frac{2}{1}^2$.

Gelidium Amansii Lamour.*

て ん ぐ さ.

第 CVI 圖版.

古名こるもは、こゝろふと(心太);ところてんぐさ(石花菜);
ぶとぐさ(紀伊);きぬくさ、まくさ及めくさ、ひめくさ(伊豆).

體ハ叢生シ、絲狀又ハ細線狀、纖維狀根ヲ以テ立チ、扁壓ニ
シテ兩縁ニ薄ク、或ハ殆ド扁平ナリ、體ノ下部ヨリ密ニ3-4回
羽狀ニ分岐ス。枝ハ互生シ、對生シ又ハ不規則ニ散在シ廣開
シ、往々輕ク雁木狀ニ屈曲ス;下部ノ枝ハ上部ノモノヨリモ長
ク、漸次上方ニ短クナリ、枝復タ順次ニ同様ノ小ナル枝ヲ存ス。
小枝ハ短クシテ尖リ、往々更ニ小ナル枝ヲ存ス。體ノ高サ
10-25 cmニ達シ、多クハ10-15 cmニシテ、幅0.5-2 mmアリ。四
分孢子囊ハ小枝ノ上部ニ細長キ又ハ圓形-長橢圓形ノ群ヲナ
シテ集ル。囊果ハ小枝ノ頂端ニ近ク膨出シ、其上部ニ多少長
ク尖リタル枝ノ上部ヲ存スルカ或ハ多少分枝セル枝ノ一部
ヲ戴ク。色ハ光澤アル暗紅紫色ナリ。質ハ軟骨質ニシテ
薄ク幅廣キモノハ稍膜質ヲナシ、乾燥スルトキハ紙ニ附着セ
ズ。

產地: 太平洋沿岸ニ於テハ潮線間ヨリ14尋ノ深所ニ至
ル迄ノ岩石上ニ在リ。基隆;九州東西兩岸;四國ヨリ金華山
ニ至ル沿岸;日本海沿岸ハ玄海ヨリ北海道西岸ニ至ル;長門豐
浦郡阿川(高潮線附近ニテ6-7寸程ノモノアリ);越中氷見(5
尋);朝鮮、濟洲島、釜山、黑山島(14尋)、蔚山、西湖津(脇谷氏)。

分布. 印度洋(フランシエー、マダガスカル)、米國カリフォル
ニア州サンデゴ。

* てんぐさ屬(*Gelidium*)ノ性質ハ日本海藻圖說第一卷第一冊第五頁ニアリ。

體ノ　　、幅、四分胞子ヲ有スル小枝ノ形狀、枝ノ容子及體質等ハ標品ニ隨テ甚シク變化アリ。　枝ハ通常甚シク廣開スレドモ亦可ナリ直立スルモアリ；或標品ニテハ枝ノ幅ハ部分ニ依テ異ナリ、廣キ部分ヨリ急ニ細クナリテ絲狀ヲナスモノナドアリ。　此等ノ一班ハ圖ニ依テ幾分明ナルヲ得ン。四分胞子群ハ大抵小枝ノ上部細長キ筧狀ニ擴カリタル所ニ形成セラルレドモ又小枝ノ先端小サキ圓キ膨レタル部分ヲナシテ其部ニ存スルアリ。　質ハ稍細キ圓柱狀ヲナセルモノ又ハ太キ體ニテハ幾分強硬ナレドモ薄クシテ渦キ體ニテハ稍膜質ナリ。　體質ハ産スル場所ノ狀況ニ依テ同ジカラズトス。　本種ハ潮線間ノ中央部ヨリ 5-14 尋ノ深所マデ産シ多少波當リノ靜カナル所ヲ好ミテ生ジ、多クハ灣形ヲナセル所ニ在リ、而シテ稍靜ナル所ニ生ズルモノハ潮流ノ宜シキ所ニアルモノヨリモ軟弱ナリトス。　其分布區域甚廣キニ亘ルヲ以テ自然種々ナル形態ヲ存シ、往々殆ド別種ノ如キ觀ヲ呈スルモノ罕ナラズトス。

本植物ハ多年生ニシテ胞子ヨリ萌發シタルモノハ其次ノ年ノ季節迄ニ實ヲ熟スルモ死スルコトナク、次年ニモ亦實ヲ熟シ、斯クシテ年々成長ヲ繼續ス；然レドモ今其成長年齡ヲ詳ニセズ、而シテ胞子ヨリ萌發シテ始テ實ヲ結ブニ至ルマデノ長サハ五分ヨリ二寸余ニ達スト雖モ此ハ勿論其産スル位置ノ潮流水温等ニ依テ一様ナラズ。　以上ノ研究ハ伊豆國賀茂郡仁科村ノ沿岸ニテ予ノ試驗シタル所ナリ。　次ニ一年以上生活シタルモノハ季節ノ終ニ至リテ成長ヲ止メ、其所ヨリ更ニ次期ノ枝ヲ伸長スルヲ以テ其部ハ恰モクビレタル如キ結節點ヲ爲ス。　此結節點ノ少距離ヲ距テ、存スルガ如キハ屢々摘ミ採ラレタル回數ヲ示スモノトス。　今千葉縣安房郡天面村大夫崎ニ於テ予ノ試驗シタル所ニ依ルニ一年間ニ伸長ス





シロヤブコナシ (L.) シロヤブ. いとあみち.

ル長サハ三寸乃至四寸五分ナルガ如シ;此モ勿論周圍ノ狀況ニ依テ同ジカラズトス。本種ハ頗ル再生ノ力ニ富ミ根ハ短キ匍枝ノ如クナリテ匍匐シ其先端ヨリ新條ヲ生ジ又五分ニ足ラザル破片ト雖モ根ヲ出シテ伸長ス;體ノ一旦根ヨリ離レタルモノト雖モ枝端若クハ何レノ部分ニテモ他物ニ附着スルトキハ其處ヨリ毛狀根ヲ出シテ附着ス。本種ノ用途ハ凍瓊脂(俗ニ寒天ト書ス)ヲ造ルニ在ルコト人ノ知ル所ナリ。ところてんハ古名こゝろふと(心太)ヲこゝろていと讀訛リタルヨリ轉化シタルモノナリト云フ。

第CVI圖版. 1: てんぐさ, *Gelidium Amansii* Lamour., ノ實ナキ體(模範トスベキモノ), $\frac{1}{1}$.—2: 體ノ一部, $\frac{1}{1}$.—3: 絲狀ノ枝ヲ有スル實ナキ體ノ一部, $\frac{1}{1}$.—4: 廣キ枝アル體ニ四分胞子ヲ有スルモノ, $\frac{1}{1}$.—5: 囊果アル枝, $\frac{1}{1}$.—6: 四分胞子ヲ有スル小枝, $\frac{15}{1}$.—7 同上ノ横斷面, $\frac{21}{1}$.—8: 囊果ヲ有スル小枝, $\frac{22}{1}$.

Dictyota linearis (Ag.) Grev.

Nom. Jap.: *Ito-amidzi*.

PL. CVII.

Dictyota linearis (Ag.) Grev., *Alg. brit. pl. XLIII*; J. Ag. Sp. Alg. I, p. 99; Id. Till Alg. Syst, V, p. 101; Id. Anal. Alg. Cont. I, p. 77; Kütz. Tab. Phyc. IX, t. 21; De Toni Syll. Alg. III, p. 275.—*D. angustissima* Sond. in Kütz. Tab. Phyc. IX, t. 21, f. 4.

Fronde narrow-linear, membranaceous, densely intricate and twisted, rooting at intervals, dichotomo-decompound, with widely patent, entire and translucent segments, which are divaricated above, ending in blunt apices. Cells of the epidermal layer are elongated and those of the internal are larger and rectangular, 3-4 times long

as broad, arranged in 5-6 longitudinal rows between both margins in the narrower portions and are very translucent in younger portions. Breadth of segments are 0.3-2 mm. *Colour* yellowish brown or greenish-olive. *Substance* thin membranaceous and the frond adheres to paper in drying.

Hab. entangled on the fronds of *Sargassum tortile* in 3-4 fathoms at Ushijima in Prov. Sanuki; Nō, Teradomari and Awo-shima (Prov. Yechigo), Sado.

PL. CVII. Fig. 1-2: sterile fronds of *Dictyota linearis* (Ag.) Grev. from Prov. Sanuki, $\frac{1}{1}$.—Fig. 3: portion of the same ($\frac{1}{3}$ mm. in breadth) with hairy roots, $\frac{3}{1}$.—Fig. 4: terminal segments of the same showing hairs and rudimentary roots on both surfaces of the frond, $\frac{8}{1}$.—Fig. 5: terminal portion of a frond from Prov. Sado with broader segments, $\frac{1}{1}$.—Fig. 6: cells of the internal layer seen through the epidermis of the portion at the second fork from the apex, $\frac{5^4}{1}$.—Fig. 7: surface view of the epidermal cells, a little below the apex, $\frac{22^0}{1}$.—Fig. 8: cross-section of frond with hairy roots from the under surface, $\frac{8^0}{1}$.—Fig. 9: beginnings of hairy roots, $\frac{22^0}{1}$.

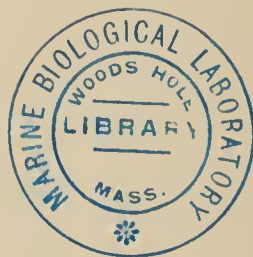
Dictyota linearis (Ag.) Grev.*

いとあみち 岡村 稱

第 CVII 圖版.

體ハ細キ線狀ニシテ膜質、屢叉狀ニ分岐シ、密ニ錯綜シ、所々ヨリ毛ノ如キ根ヲ出シテ互ニ癒着シ紛亂ス;各部ハ全縁ニシテ少シク振レ、腋圓ク廣開シ、稍半透明ニシテ内層ノ組織ヲ透視スベク、上部ノ枝ハ稍不規則ニ且廣開シテ鈍頭ニ終ル。

* *Dictyota* (あみちぐさ屬) ノ性質ハ第 16 頁ニアリ。





かづのあみち (Caulophila) のつくりと生長のち (図 1)

内層ノ細胞ハ甚大ニシテ長方形ヲナシ、幅ノ 3-4 倍長ク、體ノ細キ部分ニテハ縁ヨリ縁ノ間ニ縦ニ 5-6 列ヲナシ、皮層細胞ハ細長キ長方形ニシテ此モ亦幅ノ 3-4 倍長シ。各部ノ枝ノ幅ハ 0.3-2 mm アリ。色ハ淡黄褐色又ハ緑褐色ナリ。質薄ク膜質ニシテ紙ニ附着ス。

產地：讃岐半島(3-4 尋ノよれもくニ纏絡ス)、越後能生、寺泊、佐渡、粟生島。

分布：地中海、アドリアチック海、大西洋(Tingin 及 Gades, Grande Salvage 島、カナリー島、亞米利加熱帶部)；ナタル海；印度洋(セーロン島)。

第 CVII 圖版。1-2: *Dictyota linearis* (Ag.) Grev., いとあみちノ實ナキ體(讃岐産), $\frac{1}{1}$ —3: 同狀ノ一部(幅 $\frac{1}{3}$ mm アリ), 毛狀根ヲ示ス, $\frac{3}{1}$ —4: 同上ノ頂部, 體ノ兩面ニ毛及未發ノ毛狀根アルヲ示ス, $\frac{8}{1}$ —5: 佐渡産ノ稍廣キ體ノ一部 $\frac{1}{1}$ —6: 頂端ヨリ第二回ノ叉狀部ノ表皮ヲ透視シタル内層ノ細胞, $\frac{5^4}{1}$ —7: 頂端ヨリ少シク下ナル部分ノ皮層, $\frac{2^{20}}{1}$ —8: 毛狀根ヲ有スル部分ノ横斷面, $\frac{8^0}{1}$ —9: 未發ノ毛狀根, $\frac{2^{20}}{1}$ 。

Dictyota divaricata Lamour.

Nom. Jap.: *Kadzuno-Amidzi*.

PL. CVIII, Fig. 1-8.

Dictyota divaricata Lamour., J. Ag. Till Alg. Syst. V, p. 101; Id. Anal. Algol. Cont. I, p. 78; De Toni Syll. Alg. III, p. 276.—*Dictyota Bartayresiana* var. *β. divaricata* J. Ag. Sp. Alg. I, p. 94.—*Dictyota Notarisii* Sond. in Kuetz. Tab. Phyc. IX, t. 25, f. III.—*Dictyota*

acutiloba Kuetz. Tab. Phyc. IX, t. 29 (non J. Ag.)

Fronde caespitose, 15–20 cm. high, rising from decumbent and densely intricate basal portions, linear, entire, 3–5 mm. broad at basal portion, gradually tapering above, torted, dichotomo-decompound, with the segments standing on patent or erecto-patent axils, furnished with simple or dichotomous proliferations on both surfaces, divaricated and somewhat alternately arranged in upper branches which end in slightly attenuated emarginate apices. *Tetraspores* scattered over both surfaces of the frond. *Colour* yellowish brown, becoming darker in drying. *Substance* membranaceous and the plant imperfectly adheres to paper in drying.

Hab.: On rocks near low tide. Ryukyu, Prov. Satsuma, Ushibuka in Amakusa Isl., Cape Nomo (Prov. Hizen), Aburatsu and Bindaré (Prov. Hyuga), Mogi (near Nagasaki), Cape Shiwono-misaki (Prov. Kii).

PL. CVIII, fig. 1–8. Fig. 1: sterile frond of *Dictyota divaricata* Lam., $\frac{1}{1}$.—Fig. 2: terminal portion of another plant from Agincort I., $\frac{1}{1}$.—Fig. 3: cells of the internal layer seen through the epidermis, just below the apex, $\frac{42}{1}$.—Fig. 4: lower portion of the frond in surface view, $\frac{54}{1}$.—Fig. 5: portion of the frond bearing tetraspores, $\frac{5}{1}$.—Fig. 6: portion of the same, $\frac{42}{1}$.—Fig. 7: tetrasporangium, $\frac{175}{1}$.—Fig. 8: hair-like roots emitted from the margin of lower intertwined portion, $\frac{91}{1}$.

Dictyota divaricata Lamour.

かづのあみち 岡村 稱.

第 CVIII 圖版, 1–8 圖.

體ハ叢生シ, 下部匍匐シ, 密ニ紛亂錯綜セル部分ヨリ立ち, 高ク, 線狀ニシテ全縁, 幅 3–5 mm アリ, 下部廣クシテ漸次上方ニ



Dictyota marginata Okam. n. sp. ふくりんあみち.

細ク、捩レ、複叉狀ニ分岐シ、枝ハ廣開或ハ直立—廣開シ、體ノ兩面ヨリ單條又ハ叉狀ノ枝ヲ副出シ、上部ノ枝ハ稍不規則ニ廣開シ、且稍互生ニ出ル狀恰モ鹿ノ角ノ如ク、頂端少シク細クシテ二裂ス。四分孢子ハ體ノ兩面ニ散在ス。色ハ黃褐色ニシテ乾燥スル時ハ暗褐色ヲナス。質膜質ニシテ紙ニ附着スルコト充分ナラズ。(和名かづのハ鹿角ノ義ナリ)

產地：低潮線ニ近キ岩石ニ生ズ。アジンコート島(川上)、琉球(安藤)、坊岬(薩摩、中野與)、牛深、野母、日向油津(岡村)、鬚垂(遠藤)、茂木(大石)、潮ノ岬(岡村)。

分布：西印度、ブラジル、セネガムビア、モーリシアス島、サンビンサント、カナリー島、紅海。

第 CVIII 圖版, 1-8 圖。1: *Dictyota divaricata* Lamour., かづのあみち、ノ實ナキ體, $\frac{1}{1}$ —2: アジンコート島産ノモノ、上部, $\frac{1}{1}$ —3: 頂端下ノ部分ノ表皮ヲ透シテ内層ヲ視タルモノ, $\frac{42}{1}$ —4: 體ノ下部ノ表面, $\frac{54}{1}$ —5: 四分孢子ヲ有スル體ノ一部, $\frac{5}{1}$ —6: 同上ノ一部, $\frac{42}{1}$ —7: 四分孢子囊, $\frac{115}{1}$ —8: 下部ノ錯綜セル部分ノ縁邊ヨリ出ル根, $\frac{91}{1}$ 。

Dictyota marginata Okam. nov. sp.

Nom. Jap.: *Fukurin-Amidsi*.

PL. CVIII, Fig. 9; PL. CIX.

Fronds caespitose, erect, rising from a scutate disc (?) with fibrous roots, 15-20 cm high, more or less stupose at base, tapering below into the stem, from which (chiefly from the both sides) filiform stolonlike segments are emitted which grow up into new fronds, dich-

tomo-decompound, with erecto-patent branches standing on roundish axils, forming the flabellate outline when spread out on paper. Branches more or less pinnately arranged in an alternate manner with terminal or ultimate segments ending in a little expanded obtuse and slightly emarginate apices. Segments broadly linear, a little expanding in cuneate form beneath forks, 3-7 mm broad, sometimes 10 or more. Margin entire and thickened as if bordered. In the cross-section of frond, cells of the internal layer at the marginal portion are thickened and many layered, instead of being one. Cells of the internal layer are subequal in length and being arranged in somewhat transverse rows, they appear in the surface view as if transversely striated with curved lines extending between both margins. *Tetraspores* densely scattered over the surface of frond leaving marginal portions sterile, but in some specimens they are seen somewhat to form irregular patches. *Colour* greenish brown when young becoming more yellowish and darker when old. *Substance* thick membranaceous and the plant does not adhere to paper in drying. Fruits in summer.

Hab.: Futae in Amakusa I., Cape Nomo and Hirado (Prov. Hizen), Shinhama (Prov. Iyo), Enoshima (Prov. Sagami), Onahama (Prov. Iwaki), Kinkwazan and Karakuwa (Prov. Rikuzen).

A new species under the subgenus *Strigocarpus* perhaps to be ranked in the vicinity of *Dictyota pinnatifida* Kuetz. It is easily distinguished by its having thickened margins and stolon-like radical filaments. Though the ramification is more or less dichotomopinnate, yet some have an appearance much resembling *Dictyota dichotoma* (Huds.) Lamour.

PL. CVIII, fig. 9. Young frond of *Dictyota marginata* Okam. n. sp., appearing like *Dictyota dichotoma* (from Enoshima).

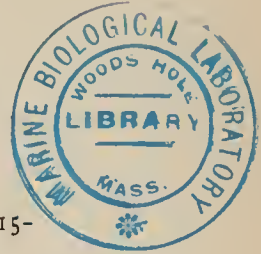
PL. CIX. Fig. 1: fully grown frond, $\frac{1}{4}$.—Fig. 2: portion of

the same, $\frac{1}{1}$.—Fig. 3: cross-section of frond showing the thickening of margin, $\frac{17.5}{1}$.—Fig. 4: tetrasporic sori, $\frac{1}{1}$.—Fig. 5: portion of a young frond having pinnately arranged segments (from Enoshima), $\frac{1}{1}$.—Fig. 6: stolon-like radical filaments (from Enoshima), $\frac{1}{1}$.—Fig. 7: cross-section of a young frond (from Enoshima), $\frac{17.5}{1}$.

Dictyota marginata Okam. 新種.

ふくりんあみち 岡村 稔

第 CVIII 圖版, 9 圖; 第 CIX 圖版.



體ハ叢生シ、直立シ、吸盤狀根(?)ト絲狀根トヲ以テ立チ、15-20 cm 高シ、下部多少黃褐色ノ毛茸ヲ存シ、下方ニハ細クナリテ莖狀ヲナシ、其兩緣及表面ヨリ(主トシテ兩緣ヨリ)匍枝ノ如キ絲狀ノ枝ヲ出シ、其先端新シキ體ヲナス、枝ハ直立—廣開シ、複叉狀ニ分岐シ、腋圓ク、枝ヲ擴グルトキハ扇狀ヲナス。枝ハ多少羽狀ニ出デ、互生シ、頂端ハ稍開展シ、鈍圓ニシテ淺ク二裂ス。各部ハ幅濶キ線狀ニシテ分岐點ノ下ニ多少開展シテ楔形ヲナシ、3-7 mm. 濶ク、時ニ 10 mm. 若クハ夫以上ノコトアリ。緣邊ハ全緣ニシテ肥厚シ、恰モ緣ヲ附ケタルガ如シ。體ヲ横斷スレバ内層ノ細胞ハ緣ノ所ニテハ増厚シ且ツ二層ナラズシテ數層ヨリ成ル。内層ノ細胞ハ其長サ略同ジク稍横ニ並列スル爲メ之ヲ表面ヨリ觀ルトキハ恰モ横ニ條紋ヲ施シタル如ク見ヘ、緣ヨリ緣ニ亘リテハ密ニ曲線ヲ畫キタル如キ狀ヲ呈スルコト猶漣ノ模様ヲ觀ルガ如シ。四分孢子ハ緣邊ニ近キ部分ヲ殘シテ密ニ體ノ表面ニ散在スト雖モ或標品ニテハ多少集リテ斑點狀ヲナスモノアリ。色ハ幼者ニ在リテハ帶綠褐色ナレドモ、老成スルトキハ黃色ヲ増シ黑味ヲ帶ブ。質ハ厚クシテ膜質、乾燥スルトキハ紙ニ附着セズ。

果實:—夏季.

產地：天草島二江、肥前野母及平戸(岡村)、伊豫新濱(奥平)、和洲江ノ島(岡村、東)；小名濱、陸前唐桑(東)；金華山(帝室博物館)。

本種ハ亞屬 *Strigocarpus* 中ニ入ルベキ新種ニシテ多分 *Dictyota pinnatifida* Kütz. ノ附近ニ置カルベキモノナルベシ。其肥厚セル縁邊ヲ有スルコト、體ノ下部ニ匍枝狀ノ根ノ如キモノアルトヲ以テ他ト區別スルコト容易ナリトス。枝ハ多少羽狀様叉狀ヲナセドモ、中ニハ略ボ叉狀ニシテあみぢぐさ、*Dictyota dichotoma*, ト區別シ難キ容子ヲナスモノアリ。和名ハ縁ノ厚キコト恰覆輪ノ如クナルニ因テ命ズ、其縁ノ厚キニ心附キタルハ東氏ノ注意スル所ナリ。

第 CVIII 圖版、9 圖。幼キふくりんあみぢ、*Dictyota marginata* Okam. 新種、ノあみぢぐさニ類スル枝態ヲ有スルモノ(江ノ島)ト。

第 CIX 圖版。1: 充分成長シタルモノ、1.—2: 同上ノ一部、1.—3: 體ノ横斷面ニシテ縁部ノ構造ヲ示ス、¹⁷⁵/₁。—4: 四分孢子群、1.—5: 江ノ島産ノモノ、羽狀ヲナセル幼者、1.—6: 匍枝ノ如キ根際ノ枝(江ノ島産)、1.—7: 同上ノ幼者ノ横斷面、¹⁷⁵/₁。

***Caulerpa sertularioides* (Gmel.) Howe**
f. *longipes* J. Ag.

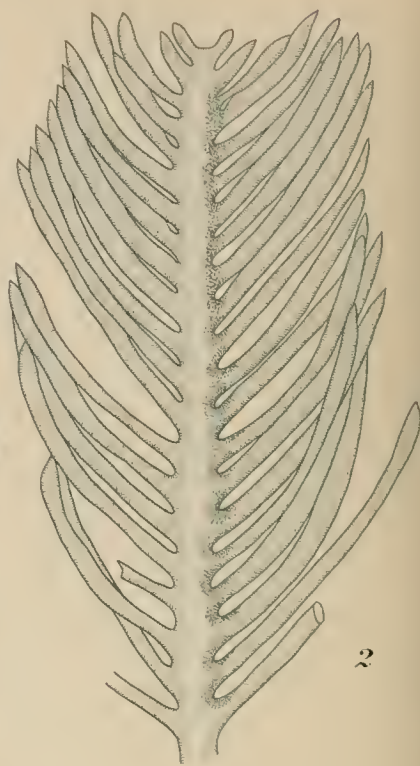
Nom. Jap.: *Takanoha-dzuta*.

PL. CX, Fig. 1-3.

Caulerpa sertularioides (Gmel.) Howe Phyc. Stud. II, p. 576, Svedelius Ecol. and Syst. Stud. of Ceylon Sp. of *Caulerpa*, p. 14.—*C. plumaris* f. *longipes* Weber v. Bosse Mongr. d. *Caulerpes* p. 295, J. Ag. Till Alg. Syst. p. 15, De Toni Syll. Alg. I, p. 453.—*Fucus taxifolius* Turn. Hist. Fuci t. 54.



1



2



3



4



5

K.Okam. del

4

1

5

2

3

Caulerpa sertularioides (Gmel.) Howe たかのはづた Fig.1-3.

Caulerpa taxifolia (Vahl) Ag. いちろづた Fig.4-5.

Hab.: Ryukyu (Kuroiwa).

PL. CX, fig. 1-3. Fig. 1: two fronds of *Caulerpa sertularioides* (Gmel.) Howe f. *longipes* J. Ag., $\frac{1}{1}$.—Fig. 2: portion of frond magnified, $\frac{8}{1}$.—Fig. 3: apex of a pinna, $\frac{54}{1}$.

Caulerpa sertularioides (Gmel.) Howe
f. *longipes* J. Ag.

たかのはづた 岡村 稱

第 CX 圖版, 1-3 圖.

匍匐莖ハ圓柱狀ニシテ, 平滑ナリ. 體ハ直立シ, 單條又ハ分岐シ, 扁平ニシテ, 羽狀ヲナス. 羽枝ハ對生又ハ稍對生シ, 圓柱狀, 又ハ扁圓ニシテ廣開シ, 基部ハ先端ト略ボ同シ程太ク或ハ少シク太ク, 上部ニ彎曲シ, 先端微凸頭ヲ有ス. 中軸ハ細ク羽枝ト同シ程太ク或ハ稍太シ. 色ハ深綠色ニシテ紙ニ附着ス.

本種ニ 5-6 ノ形態アリ. 此處ニ圖スルモノハ體稍長クシテ分岐シ, 基部多少莖ノ如クナリテ羽枝ナキヲ以テ f. *longipes*ニ充ツ.

產地: 琉球 (黒岩氏).

分布: 紅海, 印度洋, 太平洋 (フレンドリー島迄), 大西洋 (西印度ヨリ Cape Verde 迄).

第 CX 圖版, 1-3 圖. 1: たかのはづた, *Caulerpa sertularioides* (Gmel.) Howe f. *longipes* J. Ag. ノ二個體, $\frac{1}{1}$.—2: 體ノ一部, $\frac{8}{1}$.—3: 羽枝ノ先端, $\frac{54}{1}$.

Caulerpa taxifolia (Vahl) Ag. f. **typica** Sved.

Nom. Jap.: *Ichii-dzuta*.

PL. CV, Fig. 4-5.

Caulerpa taxifolia (Vahl) Weber v. Bosse f. *typica* Svedelius
Ecolog. and Syst. Stud. of the Ceylon Sp. of *Caulerpa* p. 112, Weber
v. Bosse Monogr. d. Caulerpes p. 292.—*C. taxifolia* J. Ag. Till Alg.
Syst. p. 14, Reinke Ueber *Caulerpa* p. 15, f. 19.—*C. falcata* Kuetz.
Tab. Phyc. VII, tab. 5. fig. V.

Hab.: Ryukyu (Kuroiwa).

PL. CV, fig. 4-5. Fig. 4: frond of *Caulerpa taxifolia* (Vahl)
f. *typica* Sved., $\frac{1}{2}$.—Fig. 2: portion of frond, $\frac{1}{2}$.

Caulerpa taxifolia (Vahl) Ag. f. **typica** Sved.

いちゐづた 岡村稱.

第 CV 圖版, 4-5 圖.

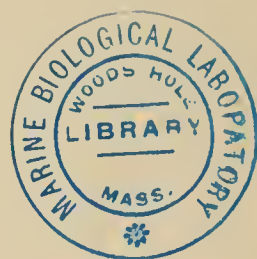
匍匐莖ハ圓柱狀ニシテ平滑ナリ。體ハ直立シ, 扁平, 輪廓
ハ披針狀—線狀, 羽狀ヲナシ, 單條又ハ分岐ス。羽枝ハ鎌狀ヲ
ナシ上方ニ彎曲シ, 常ニ對生シ, 殆ド地平ニ開張シ, 基部明ニク
ビレ先端ノ方ニ細クナリ, 短キ微凸頭ニ終ル。中軸ハ細クシ
テ其太サ羽枝ト略同シ。色ハ深綠色ナリ。紙ニ附着セズ。

Svedelius 氏ハ本種ニ 4 個ノ形態ヲ區別ス。此處ニ圖ス
ル者ハ羽枝ノ長サ中軸ノ 4-5 倍ニ等シキヲ以テ f. *typica* トス。

產地: 琉球 (黒岩氏).

分布: 錫蘭, 印度洋, 太平洋 (布哇), 太西洋 (西印度).

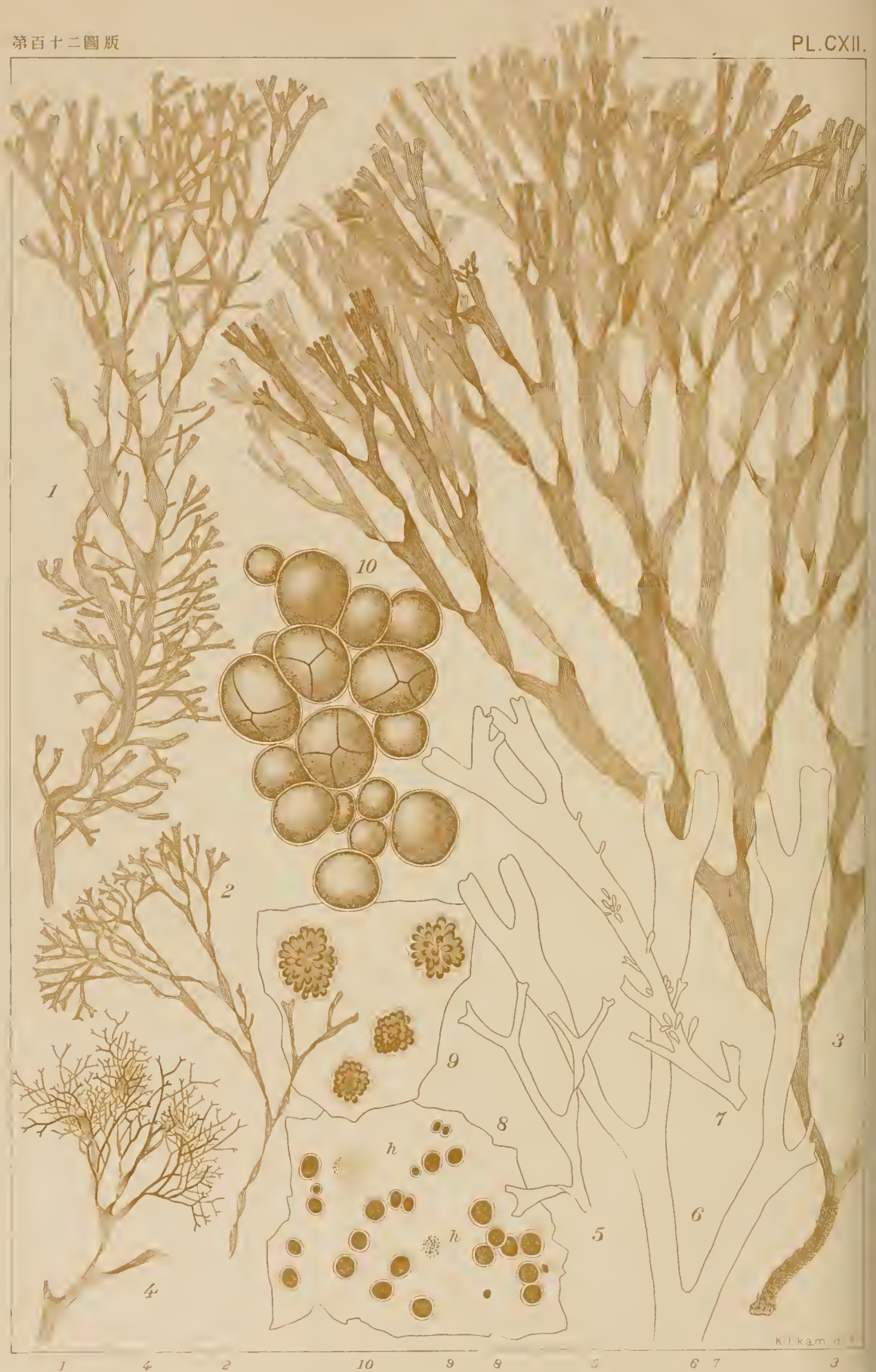
第 CX 圖版 4-5 圖. 4: いちゐづた, *Caulerpa taxifolia* (Vahl)
Ag. f. *typica* Sved. ノ體, $\frac{1}{2}$.—5: 體ノ一部, $\frac{1}{2}$.





K. Okam del

Dictyota dichotoma (Huds.) Lam. ur. あみぢぐさ



Dictyota dichotoma (Huds.) Lamour. あみぐさ



Dictyota dichotoma (Huds.) Lamour. あみちぐさ

Dictyota dichotoma (Huds.) Lamour.

Nom. Jap. : *Amidzi-gusa*.

PL. CXI—CXIII.

Dictyota dichotoma (Huds. *Alg. Angl.* p. 476), Lamour. *Essai* p. 58, *J. Ag. Sp.* I, p. 92, *Id. Till Alg. Syst.* IV, p. 92., *Id. Anal. Alg. Cont.*, I, p. 67, *Kuetz. Sp. Alg.* p. 554, *Id. Tab. Phyc.* IX, t. 10, *De Toni Syll. Alg.* III, p. 263, *Engl. u. Prantl. Pflanzenfam. Algen*, p. 297, fig. 189, *Johnstone and Croall III, Pl. CLVIII*, *K. Okam. Alg. Jap. Exsic. No. 38.*—*Zonaria dichotoma* Harv. *Phyc. Brit.* t. 103.—*Dictyota vulgaris* Kuetz. *Tab. Phyc.* IX, t. 10.—*D. attenuata* and *elongata* Kuetz. l. c. IX, t. 11.,—*D. latifolia* and *affinis* Kuetz. l. c. IX, t. 12.—*D. acuta* and *volubilis* Kuetz. l. c. IX, t. 13.—*D. implexa* and *spiralis* Kuetz. l. c. IX, t. 14.—*D. ornata* Zanard. in *Kuetz.* IX, t. 26.—*Ulva dichotoma* Lyngb. *Hydr. Dan.*, p. 31, t. 6c.

Fronds more or less stupose at base, coespitose, rising from a scutate disc, narrow or broadly linear, flat or torted, dichotomous or dichotomo-pinnate, more or less expanding with erect or patent elongato-cuneate segments, with margins entire or loaded with proliferations, widely parted or emarginated at apices, ending in roundish-obtuse segments. *Sori* densely spread over both surfaces of frond leaving narrow marginal portions. *Tetragonidial sori* elliptical at beginning, afterward becoming irregular in shape by growing together. *Oosporic sori* minute dot-like and equally scattered over both surfaces. *Colour* yellowish-green or more brownish. *Substance* thin and membranaceous and plant imperfectly adheres to paper in drying.

PL. CXI—CXV : September, 1913.

Hab.: On rocks extending from high tide to below low-water mark. Okinawa Isl. and Raleigh rock (Ryukyu); Prov. Satsuma; Nomo and Hirado (Prov. Hizen); Provs. Bungo, Tosa, and Iyo; Owase (Prov. Kii); Provs. Shima, Mikawa, Idzu, Sagami, Awa, Hitachi, Iwaki and Rikuzen; Miyako (Prov. Rikuchyu), Hakodate; Provs. Iwami, Tango, Wakasa, Noto, Yechigo, Sado and Uzen; Hebiura and Oma (Prov. Mutsu), Riishiri (Hokkaido). Fruits:—late spring to summer.

Remarks. Size of frond, habit and breadth of branches, mode of ramification, characters of terminal segments etc. much vary according to specimens from different localities. But as it is difficult to separate one from another as a distinct species, there being several gradations from one form to another, I think all those variations as the differences of forms, considering that many different species illustrated in Kuetz. Tab. Phyc. *l. c.* are put under one species as the forms of *Dictyota dichotoma*.

Those forms which I took for the typical one have more or less flabellately expanded regularly dichotomous frond, having mostly erect, entire and flat (*i. e.* not torted) segments, ending in blunt and emarginate apices with the breadth of segments varying from 2 to 10 mm. (mostly 5–6) and 10–15 cm. in height (Pl. CXI, fig. 1–3). From those forms there are some deviations among the typical ones in torting of segments, spreading of parts and tapering of apices (Pl. CXII, fig. 2–3). In some specimens proliferations are produced both from margins and surfaces (Pl. CXII, fig. 1, 7). In robust ones fronds often attain the height of 30 cm. and epidermal cells are here and there (mostly at margins) seen to be transversely divided into two. They are thicker in substance and have darker brownish colour than usual forms which have thin membranaceous substance and light yellowish-brown colour. Those robust forms let us remind our *Pachydictyon coriaceum* which how-

ever differs in having still darker colour, more thicker substance, erect emarginate apices and hypodermal cells. In some fronds as illustrated in Pl. CXII, fig. 3 (from Cape Nomo) basal portions are stupose for a distance of 4-5 cm. from the root.

In the next place there is one which I took for *f. implexa*. It has the frond of mediate size which has upper segments torte and interwoven, being dissolved into slenderer branches from the lower broader portions. In the specimens now before us such fronds attain 6-11 cm. in height with the breadth of 2-3 mm. at lower portions in dried specimens and tapering above into 0.3-1 mm. in breadth. Terminal segments are erect, obtuse and emarginate as well as widely parted and more tapering. In one and the same frond those different characters of terminal segments are often observed as illustrated in Pl. CXII, fig. 4-6.

Lastly, there is still another form which has branches more or less pinnately arranged. Of the plant of this form, there may be distinguished some two variations. As I have illustrated in Pl. CXIII, frond has an appearance much differing from the typical form having elongated and straight rachises on both sides of which lateral dichotomous branches are pinnately arranged. These forms which have broader segments are seen along the Pacific coast of this country. Another one has more or less flexuose branches having a flabellate outline, and of this form apical segments are either blunt and emarginate or more acute and parted. Those forms are mostly found along the coast of the Japan Sea and they have narrow linear fronds.

Of fructifications some remarks must be given about the arrangement of sori of oospores and tetragonidia. The former are equally scattered over both surfaces as minute dots except narrow marginal portions, while the latter are produced forming an

elliptical sorus, at least at the beginning, as it is seen from those formed in terminal segments. They become gradually confluent and in some irregularly roundish sori are formed, while in the other more or less elongated linear ones are produced. Afterward they become more and more confluent and the whole surface except marginal portions become equally covered with them. Such seems to be the case in the fronds having broader branches. In narrower fronds, tetragonida are seen from the beginning to be densely scattered in elongated patches between both margins.

PL. CXI. Fig. 1: typical form of *Dictyota dichotoma* (Huds.) Lamour. bearing tetragonidial sori, (from Enoshima) $\frac{1}{1}$.—Fig. 2: oosporic frond from Toba in the Prov. Shima, $\frac{1}{1}$.—Fig. 3: tetragonidial frond of a narrower form (from Hebiura, Prov. Mutsu), $\frac{1}{1}$.—Fig. 4: tetragonidial frond of a pinnate form (from Nomo, Prov. Hizen), $\frac{1}{1}$.—Fig. 5: cross-section of basal stupeus portion of a frond, $\frac{91}{1}$.—Fig. 6: surface view of frond showing the cells of epidermal and internal layers, $\frac{220}{1}$.—Fig. 7: portion of a tuft of hairs, $\frac{220}{1}$.—Fig. 8: vertical section through oosporic sorus, $\frac{140}{1}$.—Fig. 9: growing apices of branches, $\frac{220}{1}$.

PL. CXII. Fig. 1: torted and proliferous frond of *Dictyota dichotoma* (Huds.) Lamour. (from Futaye, Prov. Higo), $\frac{1}{1}$.—Fig. 2: torted and slenderer frond (from Prov. Satsuma), $\frac{1}{1}$.—Fig. 3: torted and broader frond (from Nomo, Prov. Hizen), $\frac{1}{1}$.—Fig. 4: portion of a frond which I took for *f. implexa* (from Prov. Higo), $\frac{1}{1}$.—Fig. 5-6: two forms of branches taken from one and same frond illustrated in the fig. 4; $\frac{5}{1}$.—Fig. 7: portion of a typical frond bearing proliferous segments from surfaces and margins (from the coast of the Japan Sea), $\frac{1}{1}$.—Fig. 8: portion of surface of fronds showing

tetragonidia and hair tufts, $h, \frac{5.4}{1}$.—Fig. 9: oosporic sori, $\frac{5.4}{1}$.—Fig. 10: tetragonidia, $\frac{1.40}{1}$.

PL. CXIII. Fig. 1: tetrasporic frond of a pinnate form of *Dictyota dichotoma* (Huds.) Lamour., (Cape Iwai, Prov. Rikuzen) $\frac{1}{1}$.—Fig. 2: cross-section of the frond, $\frac{3.20}{1}$.—Fig. 3: younger forms of tetragonidial sori, $\frac{3}{1}$.—Fig. 4: tetragonidial sori more advanced, $\frac{3}{1}$.—Fig. 5: tetragonidia, $\frac{4.2}{1}$.

Dictyota dichotoma (Huds.) Lamour.

あみぢぐさ 岡村 稱

第CXI—CXIII圖版.



體ハ基部多少毛茸ヲ存シ、叢生シ、盤狀根ヲ以テ立チ、狭キ又ハ廣キ線狀ニシテ、扁平又ハ撚レ、叉狀又ハ叉狀様羽狀ニ分歧シ、多少扇狀ニ開展シ、各部ハ直立又ハ廣開シ、長キ楔狀ニシテ、兩緣平坦若クハ副枝ヲ存シ、頂部ハ廣開シ或ハ淺クニ裂シテ鈍圓又ハ細尖ニ終ル。生殖細胞ハ群ヲナシテ體ノ兩面ニ散在シ、僅ニ細キ實ナキ部分ヲ緣邊ニ剩スノミ。四分子囊群ハ初メ橢圓狀ニ集リ後互ニ癒着スル爲メ不規則トナル。卵細胞群ハ小サキ點狀ニシテ兩面ニ平等ニ散布ス。色ハ黃綠色又ハ稍褐色ナリ。質薄キ膜質ニシテ體ハ乾燥スルトキハ紙ニ附着スルコト充分ナラズ。

產地：高潮線ヨリ低潮線以下マデアリ。琉球沖繩島及赤尾島(黑岩氏)、沖小島(薩摩)、野母、平戸、天草二江、豊後無垢島、土佐、伊豫、尾鷲、鳥羽、篠島、伊豆大島、吉佐美、相洲、房洲、常陸平潟、大津、平、陸前菖蒲田、松島、小友、大谷、磐井崎、宮古、函館、石見、丹後、若狹、能登、越後、佐渡、羽前、陸奥蛇浦及大間、北海道利尻。生殖細胞：一晩春ヨリ夏季

分布：太西洋(Fortunate Isl., 英國 ノルウェー, Gades 及 Tingin), 地中海及アドリアチック海; 太平洋(フナリツピン島, アドミラルチャー島); 亞弗利加ナタル海; ニウジーランド島.

備考：體ノ大サ, 枝態及枝ノ幅, 分枝ノ容子, 頂部ノ性質等ハ產地ノ異ナルニ隨テ甚シク差異アリ. 然レドモ一標品ト他ノモノトヲ比スルニ其間種々ナル類似アリテ確然一定シタル性質ニ依テ別種トナスコト難キヲ以テ, 予ハ總テ以上記ス所ノ差異ノ如キハ一ニ皆形態ノ差ニ屬スト見做スヲ至當ト考フルモノナリ; 既ニ Kützing 氏ノ Tab. Phyc. ニ圖說セル前記ノ數種ハ種々形態及性質ヲ異ニスルモノアリト雖モ, 皆 Dictyota dichotoma ノ種々ノ形態トシテ一種ノ下ニ分類セラレタルヲ以テ見ルモ, 本邦所産ノモノ亦種々ナル形態ヲ異ニスルハ寧ロ至當ナリト思ハル.

予ノ認メテ *f. typica* (模範的形態ノモノ) トスルモノハ多少扇狀ニ開展シ正シク又狀ニ分岐セル體ヲ有シ, 各部ノ枝ハ概テ直立シ全縁ニシテ扁平(即チ撚レズ)ナリ, 而シテ其枝端ハ鈍圓ニシテ淺ク二裂シ枝ノ幅ハ 2-10 mm アリ(多クハ 5-6), 體ノ高サ 10-15 cm. ニ達ス(第 CXI 圖版, 1-3 圖). 此等形態ノモノヨリ同ジク模範種ト認ムルモノ、中ニモ幾分ノ變化アリテ或ハ各部ノ枝ノ撚レタルアリ, 枝ノ廣開セルアリ又枝端ノ細クナレルアリ(第 CXII 圖版, 第 2-3 圖). 或標品ニテハ兩縁及ビ表面ヨリ副枝ヲ生ズルモノアリ(第 CXII 圖版, 1, 7 圖). 強盛ナルモノニテハ體ハ往々 30 cm. ノ高サニ達シ, 上皮細胞ハ其處此處ニ(多クハ縁邊ニテ)横ニ二ニ分裂スルモノアリ. 此等ノ體ハ質稍厚クシテ普通ノ品ヨリハ稍暗褐色ヲ帶ブ, 而シテ普通品ハ質薄キ膜質ニシテ淡黃褐色ヲ呈ス. 此等強盛ナルモノハ往々さなだぐさ (*Pachydictyon coriaceum* (Holm.) Okam 第 XXIII—XXIV 圖版) ト見紛フコトアレドモ, さなだぐさ

ハ更ニ暗褐色ニシテ枝ハ直立シ枝端淺ク二裂シ質厚クシテ皮層細胞二層ナリ。唯少シク疑ハシキモノハ房洲ノ崎附近ニアル長サ 20-25 cm, 程ノ大ナル一種ナリ; 予ハ今之ヲモ本種ノ中ニ收ム。(第CXII圖版, 第3圖ニ示シタル野母産ノモノニ於テ基部ノ毛茸ガ根ヨリ 4-5 cm. ノ上部マデニ及ボセルモノアリ)。

次ニ予ノ *f. implexa* ニ宛タルモノハ中位ノ大サヲ有シ, 其上部ノ枝ハ撚レ且ツ紛亂シ, 下部ノ廣キ部分ヨリ漸次又狀ニ分歧シテ細キ枝トナルナリ。體ノ高サ 6-11 cm ニシテ, 幅ハ乾燥シタル標品ニテ計ルニ下部 2-3 mm. ニシテ, 上部ハ 0.3-1 mm. ナリ。頂部ノ枝ハ直立シ, 鈍頭ニシテ淺ク二裂スルアリ又ハ廣開シテ細クナレルアリ。同一ノ體ニ於テ以上二様ノ頂部ノ枝ヲ有スルモノ往々之アリ, 即チ第CXII圖版, 4-6 圖ニ示ス所ノ如シ。

更ニ尙一ノ形態アリ, 其ハ多少羽狀ニ分枝セル枝ヲ有スルモノナリ。此形態ニ於テ二ツ程異ナルモノアリ。第CXIII圖版ニ示シタル如キハ模範種トハ著シク異ナレル觀ヲ呈シ, 主枝ハ長ク伸ビ, 其兩側ニ叉狀ノ枝ヲ有スルモノ稍羽狀ニ配列セラル。此等形態ノモノハ枝ノ幅廣クシテ太平洋沿岸ニ産ス, 即チ房洲白濱, 陸前磐井崎, 唐桑等ヨリ得タリ, 他ノ一ハ多少輕ク雁木狀ニ屈折セル主枝ヲ有シ, 枝ハ扇狀ノ輪廓ヲナシ枝端ハ鈍圓ニシテ淺ク二裂セルモノト, 廣開シテ細クナレルモノトアリ。此等形態ノモノハ主トシテ日本海沿岸ニ産シ體ノ幅ハ細クシテ線狀ナリ, 即チ, 野母, 能登羽咋等ニ知ラル。

生殖細胞ニ關シテハ少シク其配置ニ就テ説ク所アルベシ。卵細胞群ハ小サキ點狀ヲナシテ體ノ兩面ニ平等ニ散布シ, 唯縁邊部ノミ之ヲ生ゼズ; 四分子囊群ハ始メ橢圓狀ヲナシテ集ル, 少ナクトモ其形成ノ初期ニ於テ然ルモノノ如シ, 其

ハ頂部ノ枝ニ形成セラル、モノ概テ橢圓狀ナレバナリ。此等ハ漸次癒合シ、或モノニテハ不規則ニ圓キ群ヲ形成シ、他ノモノニテハ多少長キ線狀ヲナス。後彌々癒着シテ遂ニ全面ヲ蔽フニ至ル。以上説ク如キ容子ハ幅濶キ體ニ於テ然ルモノ、如シ；其狹キ線狀ノモノニテハ四分子囊ハ始ヨリ長キ斑點ヲナシテ密ニ兩縁ノ間ニ散在ス。

第CXI圖版 1: あみちぐさ, *Dictyota dichotoma* (Huds.) Lamour. ノ模範的形態ニシテ四分子群ヲ有スルモノ(江ノ島産), $\frac{1}{1}$ —2: 卵細胞ヲ有スルモノ(鳥羽産), $\frac{1}{1}$ —3: 狹キ形態ノモノ, 四分子群アリ(陸奥蛇浦), $\frac{1}{1}$ —4: 羽狀ヲナセル細線狀ノモノ, 四分子群アリ(野母産), $\frac{1}{1}$ —5: 體ノ下部ノ毛茸アル部分ノ横斷面, $\frac{91}{1}$ —6: 體ノ表面ヨリ内層ヲ透視シタルモノ, $\frac{220}{1}$ —7: 毛叢ノ一部(基部ノ毛ニアラス), $\frac{220}{1}$ —8: 卵細胞群ノ縦斷面, $\frac{140}{1}$ —9: 枝ノ成長點 $\frac{220}{1}$.

第CXII圖版 1: 撚レテ副枝ヲ有スル形態ノモノ(天草島二江産), $\frac{1}{1}$ —2: 撚レテ細キモノ(薩摩沖小島), $\frac{1}{1}$ —3: 撚レテ廣キモノ(野母産), $\frac{1}{1}$ —4: *f. implexa* ト思ヘル形態ノ一部(肥後) $\frac{1}{1}$ —5-6: 第4圖ニ示シタル體ヨリ取レル二様ノ枝, $\frac{5}{1}$ —7: 模範的形態ノモノ、表面及縁邊ヨリ副枝ヲ生ジタルモノ(日本海産), $\frac{1}{1}$ —8: 四分子群ト毛, $\frac{1}{1}$ トヲ有スルモノ, $\frac{54}{1}$ —9: 卵細胞群, $\frac{54}{1}$ —10: 四分子囊, $\frac{140}{1}$.

第CXIII圖版 1: 羽狀ヲナセル形態ノ四分子群ヲ有スルモノ(磐井崎産), $\frac{1}{1}$ —2: 體ノ横斷面, $\frac{300}{1}$ —3: 四分子群ノ幼キモノ, $\frac{3}{1}$ —4: 同上ノ少シク進ミタルモノ, $\frac{3}{1}$ —5: 四分子囊, $\frac{42}{1}$.



2 6 1 3 4 5
Cystoseira articulata J. Ag. やばねもく Fig. 1-5.
 Roots of *Chordaria abietina* Rupr. まつもゝ根 Fig. 6.

Cystoseira articulata J. Ag.

Nom. Jap.: *Yabané-moku*.

PL. CXIV.

Cystoseira articulata J. Ag. Sp. Alg. I, p. 216.—*Hormophysa articulata* Kuetz. Tab. Phyc. X, p. 22, t. 61.—*Hormosira?* *articulata* (Forsk.) Zanard. Plant Mar. Rub. p. 243, n. 35, De Toni Syll. Alg. III, p. 188.—*Cystoseira* (*Hormophysa*) *articulata* Kuetz., Okam. List of Mar. Alg. col. in Caroline Islands and Australia, (Bot. Mag. Tokyo Vol. XVIII, No. 209, 1904) p. 6, fig. 2-3.

Root and Stem..... *Fronds* many times laterally branched on all sides, interruptedly winged on 2-3 sides, with wings truncated at the upper side and cuneiform below, and dentate at margins, producing branches from the axils of wings. Fronds attain the height of 20-30 cm. with the wing, 10-13 mm. broad. Air-vessels swollen in upper branches, ellipsoidal, trialated and chained, 5×8 mm. Conceptacles produced in the wings of vessels, with male and female cells in the same conceptacle, containing one oosphere in an oosporangium. *Colour* dark brown in dried specimens. *Substance* leathery.

Hab.: Okinawa and Heanza Isl. (Ryukyu).

PL. CXIV. Fig. 1: frond of *Cystoseira articulata* J. Ag., $\frac{1}{2}$.—Fig. 2: branch reimmersed with conceptacles in the wings of air-vessels, $\frac{1}{2}$.—Fig. 3: three air-vessels with conceptacles, $\frac{1}{2}$.—Fig. 4: cross-section of an air-vessel showing conceptacles, $\frac{5}{16}$.—Fig. 5: antheridia and oosporangium, $\frac{220}{1}$.

Cystoseira C. Ag. 1821.

やばねもく屬.

SARGASSACEAE, FUCOIDAE.

フークス科, ほんだわら亞科.

體ハ中位ノ大サニシテ盤狀根ヲ以テ立チ, 時トシテハ多年ニ亘リテ生活セル殘株ノ如キ狀ヲナシタル部分ヲ存シ, 此株ヨリ多數若クハ少數ノ莖ノ如キ形狀ヲナシタル枝ヲ發條シ, 時トシテハ殆ド根際ヨリ多數ノ莖ノ如キ狀ヲナセル部分又ハ主枝ヲ出ス. 殘株ノ如キ部分ハ直立シ又ハ傾臥シ, 種々ニ屈曲シ, 多クハ著シキ長サト太サトヲ有シ, 單條ナルアリ又ハ圓錐狀乃至橢圓狀ノ瘤ノ如キモノヲ以テ圍マレ, 或ハ以上ノ如クナラズシテ, 多少密ニ分岐シ, 疣ノ如キモノ, 刺ノ如キモノ又ハ枝ノ殘部ノ如キモノ、爲ニ粗糙ナリ. 莖ノ如キ部分若クハ主枝ハ長ク爲リ, 絲狀又ハ圓柱狀ニシテ, 稜角ヲ有シ, 扁壓シ, 或ハ2—3ノ側面ヲ有シ, 時ニハ, 斷續セル翼狀片ヲ存シ, 往々刺又ハ鋸齒ヲ存シ, 數回, 二側面若クハ各方面ニ分岐シ, 多少明ニ長條ト短條トノ區別ヲ存シ, 短條ハ時ニ甚ダシク小ニシテ單ニ刺狀ヲナスコトアリ, 氣胞ハ特別ニ存スルコトナシト雖モ枝ノ其處此處ニ膨レテ氣胞狀ヲナセルモノ, 時ニ單獨ニ, 時ニ鎖狀ニ連ナルコトアリ. 生殖窠ハ多少他ト形狀ヲ異ニセル末位ノ枝ニ形成セラレ, 雌雄同一窠中ニ在リテ生殖器托ノ上半部ニハ雄性器, 下半部ニハ雌性器ヲ形成ス. 卵囊ハ一個ノ卵ヲ藏ス. 雄性器ヲ有スル毛ハ可ナリ密ニ分岐シ, 雄性器ハ主トシテ窠ノ基部ニ形成セラル. 雄性器ノ細胞膜ハ一層ヨリ成ル. 精子細胞ハ卵球狀ニシテ紅色點ヲ有シ運動スル際ニハ二本ノ纖毛中, 其長キモノヲ前方ニ向ク.

從來知ラレタル種類ハ其數 60 余アレドモ, 其半ハ明ニ疑

ナキモノトス。多クハ地中海及太西洋ニアリテ北緯 52° ト 28° トノ間ニ産ス。或種ハ紅海、印度洋及太平洋ニ在リ。太西洋東部ニ弘ク分布スルモノハ *C. Abies marina* (Turn.) J. Ag., *C. granulata* Ag. ノ如キモノニシテ *C. (Hormophysa) triquetra* (L.) J. Ag. ハ喜望峯ニ知ラレ、*C. Myrica* (Gmel.) Ag. ハ紅海ニ固有ノ種ナリ；彼ノ莊大ナル *C. (Stephanocystis) osmundacea* (Menz.) Ag. ハ太平洋北部米國沿岸ニ固有ノ種ナリ。一屬ノ名ハ氣胞 (cysta) ト鎖 (seira) トヨリ成ル即チ氣胞ノ鎖狀ナルニ因メリ；和名やばねぐさハ矢羽ヲハギタル如クナレバ云フ。

Cystoseira articulata J. Ag.

やばねもく 岡村 稱

第CXIV圖版

根及莖不明。體ハ數回側面ヨリ各方面ニ分岐シ、枝ノ兩側乃至三側面ヨリ斷續シテ翼狀片ヲ存シ、翼ハ上緣截形ニシテ下部ハ楔形ヲナシ、緣邊齒狀ニシテ翼ノ腋ヨリ枝ヲ生ズ。體ノ高サ 20-30 cm ニシテ翼ハ 10-13 mm. 濶シ。氣胞ハ上部ノ枝ノ所々ニ膨レテ存シ、楕圓狀ヲナシ、三側ニ翼ヲ存シ、連鎖ヲナス、長サ 8 mm ニシテ 5 mm 濶シ。生殖窠ハ氣胞ノ翼中ニ生ジ、雌雄細胞ハ同一ノ窠中ニアリテ卵囊中ニハ一個ノ卵細胞ヲ藏ス。色ハ乾燥品ニテハ暗褐色ナリ。質革質ナリ。

產地：沖繩及平安產島(琉球、黑岩氏)。

分布：紅海、支那海；オーストラリア(藤田勘太郎)。

第CXIV圖版。1: やばねもく, *Cystoseira articulata* J. Ag. ノ體, $\frac{1}{1}$.—2: 枝ノ一部ヲ再ビ水中ニ浸シタルモノ；翼ニ生殖窠アリ, $\frac{1}{1}$.—3: 三個ノ氣胞, $\frac{1}{1}$.—4: 氣胞ヲ橫斷シテ翼ニ生殖窠アルヲ示ス, $\frac{5}{1}$.—5: 精子細胞及卵細胞ト毛, $\frac{220}{1}$.

Pterocladia capillacea (Gmel.) Born. et Thur.

Nom. Jap.: *Oba-kusa*.

PL. CXV.

Pterocladia capillacea (Gmel.) Born. et Thur. *Not. Algol.* p. 57, t. 20, f. 1-7, De Toni Syll. Alg. IV, p. 162.—*Gelidium capillaceum* Kuetz. Tab. Phyc. XVIII, t. 53, Hauck Meeresalg. p. 190, fig. 82 a-c.—*Fucus capillaceus* Gmel. Hist. Fuci p. 146, t. 15, f. 1.—*Gelidium corneum* var. *a*. J. Ag. Sp. II, p. 470.—*Gelidium corneum* var. *pinnatum* Kuetz. Sp. p. 764, Tab. Phyc. XVII, t. 50, f. d-f., Harv. Phyc. Brit. tab. 53, f. 1.

Fronds acipito-compressed or almost flat, rising from fibrous roots, linear, regularly 3-4 times pinnate, rib-less, with branches of every order opposite or alternate, very patent and tapering toward the base, mostly obtuse at apices (rarely tapering to slender apices). *Tetrasporangia* in pinnules forming oblong, spatulate or roundish sori. *Cystocarps* formed in the middle portion of a pinnula, hemispherically swollen on one side. *Colour* purplish red fading to yellowish. *Substance* cartilaginous.

Hab.: On rocks, shells, stones, etc. extending from high tide to the depth of 4-5 fathoms. Hōko-to (Taiwan); Goto Isl.; Provs. Tosa, Kii, Shima, Isé, Idzu, Sagami, Awa, Kadsusa, Rikuzen, Tsushima, Tango, Wakasa and Noto. Ogasawara-Isl. *Fruits*:—spring-summer.

Fronds attain the height of 10-20 cm. and the breadth of frond vary from 0.5-2 mm. being often very slender in pinnules. The plant takes a very different appearance according to its habitat. Those growing near high tide are densely pinnate in elegant and regular manner as illustrated in fig. 3, while those in deeper





K. Okam. del.

10 9 6 5 1 11 7 8 4 2 3

Pterocladia capillacea (Gmel) Born. et Thur. おばくき.

waters have branches loosely set (fig. 2 and 4). The specimens illustrated in Fig. 3 and 4 show two extremes, one densely, the other loosely pinnate, and fig. 1 shows a form in which the two forms are combined in the same frond. All those forms are seen in the same locality. Founded on those grounds I have put those fronds such as illustrated in Fig. 2-4 under the same species.

PL. CXV. Fig. 1-4: different forms of *Pterocladia capillacea* (Gmel.) Born. et Thur; 1: upper half densely pinnated and the lower half loosely set with broader branches; 2: frond with broader segments; 3: densely pinnate frond; 4: very loosely pinnated frond from deeper waters; $\frac{5}{1}$.—Fig. 5: outline of the cross-section of upper portion of stem, $\frac{5}{1}$.—Fig. 6: portion of the same, $\frac{22}{1}$.—Fig. 7-8: two forms of tetrasporic sori from different individuals, $\frac{12}{1}$.—Fig. 9: surface view of a cystocarpic pinnula, $\frac{15}{1}$.—Fig. 10: longitudinal section of the same, $\frac{22}{1}$.—Fig. 11: cross-section of cystocarp, $\frac{91}{1}$.

Pterocladia J. Ag. 1852.

おばくさ属

GELIDIACEAE. てんぐさ科.



體ハ扁壓ニシテ兩縁ニ薄ク、概テ兩縁ヨリ羽狀ニ分岐シ、中肋ハ時ニ明ニ、時ニ不明ナルコトアリテ、極メテ緻密ニシテ強靱ナル組織ヨリ成リ、密ニ結合セル皮層ヲ存ス；細胞ト絲トヨリ成ル。皮層ハ2-3層ノ細胞ヨリ成リテ密ニ結合シ、内皮部ハ細長キ細胞ト殆ド内容ナキ光澤アル絲トヨリ成リ、此絲ハ密ニ集リテ縦走シ細クシテ不明ナル中軸ヲ圍ミ、中軸ハ幼部ニハ之ヲ認ムベク横ニ關節セル頂細胞ヲ戴ク。——四分胞子囊群ハ概テ扁壓ナル僅ニ局部ノミ肥厚セル枝ニ集リ枝ノ上部ノ

兩面ニ形成セラレ十字様ニ分裂ス。囊果ハ枝ノ上部ニ近ク形成セラレ、一室ヨリ成リ、一方ノ面ニ半球狀ニ隆起シ一孔ヲ存ス；孢子層ハ中軸ニ沿フテ長ク形成セラレ、多數ノ「パラフ井シス」ヲ以テ子囊ノ壁ト結合セラル。

本屬ハ囊果ノ一室ナルヲ以テ其二室ナルてんぐさ屬, Gelidum, ト區別セラル、外他ノ點ハ總テ之ト異ナルコトナシ。正確ナル模範種ハ *Pterocladia lucida* (Brown) J. Ag. ニシテ Australia ニ産ス。一屬ノ名ハ翼(Pteron)ト枝(clados)トヨリ成ル。

Pterocladia capillacea (Gmel.) Born. et Thur.

お　　ば　　く　　さ。

第 CXV 圖版。

體ハ扁壓ニシテ兩縁ニ薄ク、或ハ殆ド扁平、纖維根ヨリ立チ、細線狀ニシテ、正シク3—4回羽狀ニ分岐シ、中肋ナシ、各部ノ枝ハ互生シ、甚ダシク廣開シ、基部ノ方ニ細クナリ、頂部ノ方ニハ概テ鈍圓ナリ(稀ニ細クナリテ尖ルコトアリ)。四分孢子囊ハ小羽枝ニ生ジ、長橢圓形、筐狀又ハ圓形ノ群ヲナス。囊果ハ小羽枝ノ中部ニ形成セラレ、一方ノ面ニ半球狀ニ膨起ス。色ハ紫紅色ニシテ黃色又ハ帶綠黃色ナリ。質ハ軟骨質ナリ。

產地：高潮線ヨリ4—5尋余ニ及ビ、岩石、介殼等ニ附着ス、概テ淺處ニ在リ。澎湖島八罩島、五島有川(安藤氏)、土佐鄉野、浦戸、須崎、紀伊天神崎、鳥羽、伊勢、伊豆沿岸、錢州、小笠原島、相模、房州、上總、松島、對島、丹後、若狹、能登。

分布：地中海、大西洋、歐州沿岸。

體ハ10—20 cm. 高ク、幅0.5—2 mm. アリ、小羽枝ハ往々毛髮ノ如ク甚シク細キコトアリ。本植物ハ其産スル位置ノ深淺、波浪ノ強弱等ニ依テ著シク其外觀ヲ異ニシ、高潮線ニ近ク産スル

モノハ密ニ羽狀ニ分岐シテ美シク、其色往々帶綠黃色ナルコトアリ(第3圖)、而シテ深所ニアルモノハ枝ハマバラニ出ヅ、(第2及4圖)。第3圖ト4圖トニ示シタルモノハ兩極端ノ形ヲ示セルモノニシテ一ハ極メテ密ニ羽狀ヲナシ、一ハ極メテマバラニ枝ヲ分チ、一見甚ダシク異ナリトス；然レドモ幸ニ第1圖ニ示セル如ク同一ノ體ニ於テ半ハ密ニ羽狀ニ、半ハマバラニ羽狀ヲナセル廣キ枝アル標本ヲ得タルヲ以テ予ハ此處ニ圖スル如キ廣狹粗密ノ差彼是著シキ差アルモノヲ皆同一種ノ下ニ收メタリ。此等ノ諸形態ハ往々一ヶ所ニ於テ此ガ標品ヲ得ルコト難シトセズ。

本種ハ普通ニてんぐさ (*Gelidium Amansii*) 第三卷第二冊 CVI 圖版)ト混同スレドモ其囊果ノ構造一室ナルヲ以テ之ヲ區別スベシ然レドモ各部ノ枝ノ下部細キコトヲ以テ一目ニシテ彼此ヲ判別スルニ難シトセズ。本種ハ其構造上絲狀細胞多キヲ以テ所謂寒天分少ナキガ故ニ寒天製造ノ原料トシテハ極メテ劣等ナリトス。各地ノ淺所ニテ採集スルモノ多クハ此類ナリ。和名おばハ姥即チ老成ノ義ニシテ伊豆地方ノよたくさ又がにくさモ其劣惡ナル意ヲ表スルニ過ギズ、紀州ニテハこひらト云フ小ニシテ扁平ナレバナリ。伊勢ニテまつくさノ名アリ。おばくさ亦伊勢地ノ方言ナリ。

第 CXV 圖版. 1-4: おばくさ *Pterocladia capillacea* (Gmel). Born. et Thur. ノ種々ノ形態; 1: 半ハ密ニ半ハ粗ニ分岐セルモノ; 2: 枝ノ幅廣ク枝稍粗ナルモノ; 3: 密ニ正シク羽狀ヲナセルモノ; 4: 枝ノ幅廣ク枝端細ク、小枝少ナクシテ枝極メテマバラナルモノ; $\frac{1}{1}$. —5: 莖ノ上部ノ横斷面ノ輪廓, $\frac{54}{1}$. —6: 同上ノ一部, $\frac{220}{1}$. —7-8: 二個ノ體ヨリ取レル二様ノ四分胞子群, $\frac{13}{1}$. —9: 子囊ヲ熟セル小羽枝ヲ表面ヨリ見タルモノ, $\frac{15}{1}$. —10: 同上ノ縦斷面, $\frac{22}{1}$. —11: 囊果ノ横斷面, $\frac{91}{1}$.

CORRIGENDA.

Root of **Chordaria abietina** Rupr.

PL. CXIV., Fig. 6.

In the Vol. II, No. VII, p. 122, Pl. LXXXV, I have erroneously illustrated the root of *Chordaria abietina* Rupr. as *scutate*. But, on getting an alcoholic material through the kindness of Mr. Yendo I have found it to be *tubercous and lobed* and so here I make the correction.

正 誤

ま つ も, **Chordaria abietina** Rupr. ノ 根.

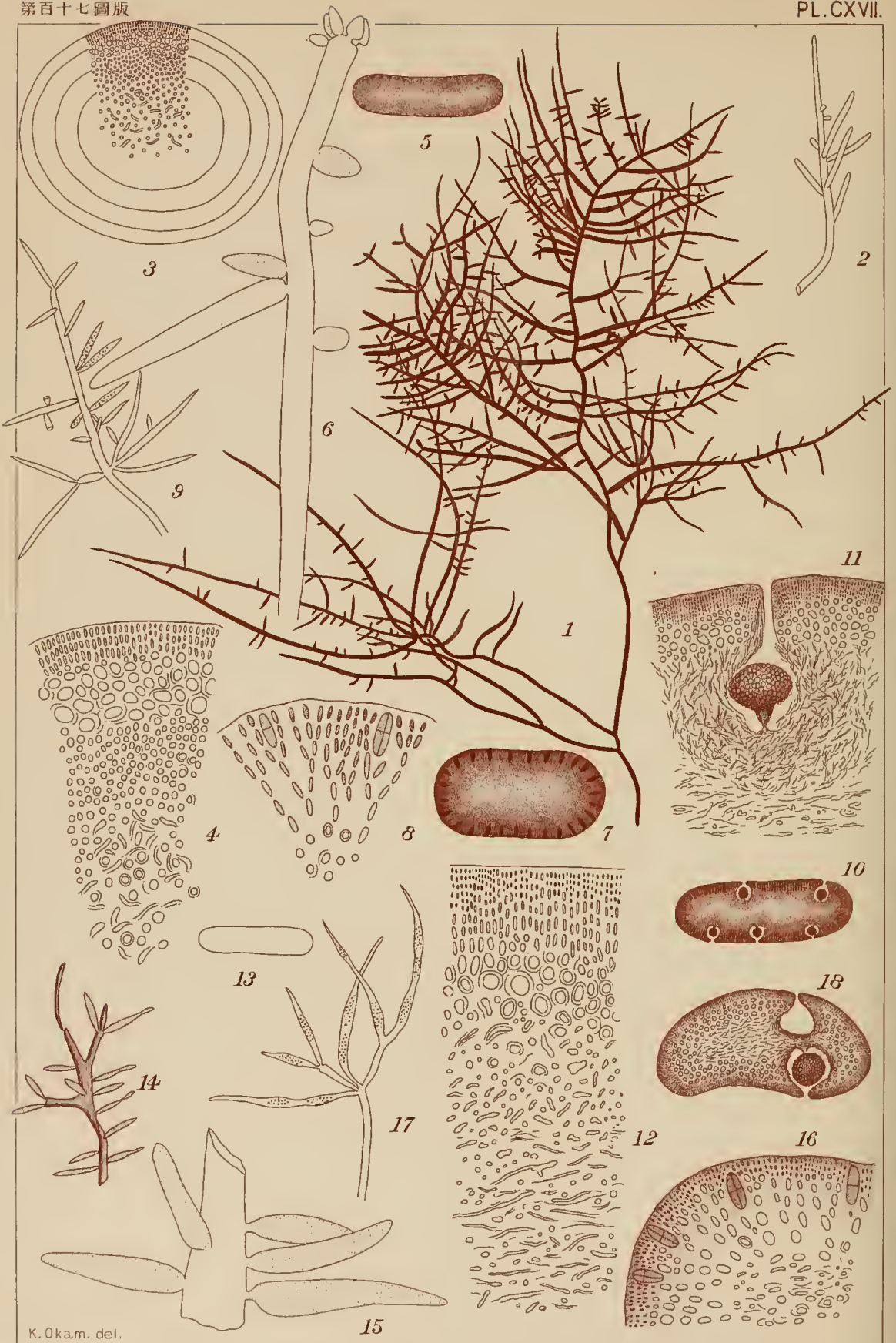
第 CXIV 圖 版 第 6 圖.

第二卷第二冊第 122 及 124 頁第 LXXXV 圖版ニ於テ予ハまつも, *Chordaria abietina* Rupr. ヲ圖說シ, 其附着器ヲ誤リテ圓盤狀根トシタリ. 其後遠藤博士ハ予ニ其誤ナルコトヲ告ゲラレ且アルコホール材料ヲ送ラレタルヲ以テ更ニ之ヲ調査シタルニ其塊根狀ニシテ分裂スルモノナルコトヲ知レリ, 依テ此處ニ革メテ之ヲ圖示シ以テ氏ノ好意ニ酬ユ.



Grateleupia divaricata Okam. かたのり





K. Okam. del.

Grateloupia ramosissima Okam. n.sp. そぢむかで Fig. 1-11.

Grateloupia divaricata Okam. かたのり Fig. 12-18.

Grateloupia divaricata Okam.

Nom. Jap.: *Kata-nori*.

PL. CXVI—CXVII, Fig. 12-18.

Grateloupia divaricata Okam. New or little known Algae from Japan (Bot. Mag. Tokyo Vol. IX, No. 106) No. 1, Pl. IX, f. 1-2.

*Fronde*s numerous from a common callous disc, each rising with a single stem, 7-20 cm. high, rarely 30 cm. or more, narrowed at its base, soon becoming compressed and afterwards preserving everywhere a nearly equal width of 1-1.5 mm. (rarely 3 mm. or more) till, approaching to the apices, it again grows narrower, and ends in a sharpish point. Stem is undivided at the base for a more or less long distances, then becomes divaricately dichotomous, the distance between the lower dichotomies being longer than that between the upper ones. Sometimes the ramification is more regularly dichotomous in somewhat flabellate manner, but more usually it is irregular, irregularities being assisted by divaricately decompound segments and by large secondary branches, which has developed from proliferations, either simply elongating or similarly dichotomo-decompounded as other portion of frond. In some specimens, segments expand somewhat beneath the forks, being slightly -analiculated. All the branches are beset on both sides (some few ones from surfaces) with proliferous ramuli, usually 1-2 cm. long, distichous, scattered, some standing nearer to each other in secund manner, others rather remote; some remain simple and short, others forked. Proliferations are linear constricted at base, tapering at apex. Terminal segments often elongate. Structure of the

PL. CXVI—CXX, December, 1913.

frond is that of the generic type and the cells are firmly coalesced. —*Fruits* of both kinds are formed in ultimate segments and proliferous ramuli. Tetraspores forming a subsorus in the median or terminal portion of ramuli, oblong, immersed among cortical filaments. Cystocarps here and there scattered in a few groups in terminal portion of frond and in proliferations. They are not found in older and lower segments. *Colour* dull purplish-green, becoming greenish-yellow. *Substance* cartilaginous, becoming firmer in drying. Plants do not adhere to paper in drying.

Hab.: On rocks near high tide. Provs. Idzumo, Wakasa Tango, Noto, Yetchu, Yechigo, Uzen, Mutsu, Rikuchu, Rikuzen. *Fruits.*: July—October.

Affinities: The many times dichotomous frond of the present plant induces us to think of its relation with *Gratetoupia dictotoma* and by that characters it may be referred to the section *Chondrophyllum*. With *Gr. filicina*, on the other hand, the present alga shows some relations, for there is, in some specimens (as I have illustrated in the larger one of the two figures in Pl. CXVI), a very close resemblance in appearance between the two species. In such specimens, the frond is very much elongated and remains for a greater lengths simple; then once or twice forks at longer distances, and the segments from the base to apical portion are beset on both sides with proliferous very elongated, simple or distantly forked horizontal distichous branches, either naked or clothed with lesser sorts of ramuli. One may easily take such forms for *Gr. filicina*, though dichotomous ramification is rarer in case in that species. The substance, however, is firmer and more cartilaginous than *Gr. filicina*, and moreover, even in those specimens which have an appearance like that plant, tetraspores are collected

in proliferous younger branches not in older segments, while in *Gr. filicina*, tetraspores and cystocarps are equally scattered over the frond.

Thus, the present alga seems to me to be an intermediate form between *Gr. filicina* and the section to which *Gr. dictotoma* and others belong.

PL. CXVI. Two fronds of *Grateloupia divaricata* Okam., nat. size.

PL. CXVII, Fig. 12-18. Fig. 12: portion of cross-section of the frond, $\frac{220}{1}$.—Fig. 13: outline of cross-section of stem, $\frac{5}{1}$.—Fig. 14: tetrasporic ramuli, $\frac{1}{1}$.—Fig. 15: tetrasporic ramuli magd. $\frac{5}{1}$.—Fig. 16: portion of the cross-section of a tetrasporic ramulus, $\frac{220}{1}$.—Fig. 17: ramuli bearing cystocarps, $\frac{1}{1}$.—Fig. 18: cystocarps, $\frac{54}{1}$.

Grateloupia divaricata Okam.

かたのり.

第 CXVI—CXVII 圖版, 12—18 圖.

體ハ小サキ殻狀附着器ヲ以テ多數叢生シ, 各一條ノ莖ヲ有シ, 7-20 cm 高ク, 稀ニ 30 cm 若クハ其以上ニ達シ, 基部細ク, 上部ハ直ニ扁壓トナリ, 其レヨリ以上ハ各部殆ド同様ノ太サヲ持續シ, 枝端ノ方ニハ細クナリテ頂端尖銳ナリ; 枝ノ幅ハ 1-1.5 mm ヲ普通トスレドモ, 稀ニ 3 mm 以上ナルコトアリ. 莖ハ多少長キ距離ノ間分岐スルコトナク, 其レヨリ以上ノ所ニテ廣ク叉狀ニ分岐シ, 下部ノ分岐點ノ距離ハ上部ノモノヨリモ長シ, 即チ上部ハ下部ヨリモ密ニ叉狀ヲナス. 時トシテハ正シク叉狀ニ分岐シテ稍扇狀ヲナスコトアレドモ, 通常ハ不規則ナ

ルヲ例トス、其不規則ナルコトハ廣開セル複叉狀ノ枝アルコト、大ナル後生枝ヲ存スルコト、ノ爲メニ一層然リトス；後生枝ハ副枝ノ爲ス所ニシテ、副枝ハ單條ニ伸長スルカ或ハ他ノ部ト同様ニ複叉狀ニ分ル。或標本ニテハ分岐點ノ處ニテ稍展ガリ其部ハ少シク反リテ溝狀ヲナスコトアリ。枝ハ凡テ其兩側(幾分又表面ヨリ出ルモノモアリ)ヨリ副出スル小枝ヲ存ス；小枝ハ 1-2 cm ノ長サヲ常トシ、叉狀ニシテ、散生シ、時ニハ相接近シテ一側面ニ偏在シ、時ニハ稍隔リテ出デ、單條ニシテ短キアリ、又ハ分叉スルモノアリ。副枝ハ線狀ニシテ基部クビレ、頂端細シ。上部ノ枝ハ往々長ク伸ブ。體ノ構造ハ屬ノ性質ノ如クナレドモ細胞ハ硬キ細胞間物質ヲ以テ密ニ結合セラル。——兩種ノ果實ハ最末位ノ枝及副生セル小枝ニ形成セラル。四分孢子囊ハ小枝ノ中央部又ハ頂部ニ稍群狀ニ集マリ、其群ハ長楕圓狀ニシテ孢子ハ皮部ノ絲狀細胞層中ニ存ス。囊果ハ頂部ノ枝及副枝ノ其處此處ニ少シヅ、集リテ生ジ、老成部及下部ノ枝ニハ形成セラル、コトナシ。色ハ暗紫褐色ニシテ綠色ヲ帶ビ、往々黃綠色トナル。質ハ硬キ軟骨質ニシテ、乾燥スルトキハ著シク硬シ。體ハ乾燥スルトキハ臺紙ニ附着セズ。

產地：潮線間ノ淺所ニ在ル岩石ニ生ズ。丹後宮津、能登羽咋、越中氷見、越後、出雲加賀浦、若狹小濱、羽前、陸奥八戸、陸中宮古、陸前磐井岬。果實：七-十月。

類縁：本種ハ數回叉狀ニ分岐スル點ニ於テ *Grateloupia dichotoma* ニ類スルヲ以テ *Section Chondrophyllum* 中ニ入ルベキモノトス。一方ニハ又むかでのり、*Gr. filicina* ト近キ類縁ヲ有ス；蓋シ多數ノ標品中ニハ第 CXVI 圖版ニ圖シタル大ナル方ノモ

ノ、如ク兩種ノ間ニ外形ノ酷似スルモノアレバナリ、斯ノ如キ標品ニテハ體ハ甚シク長クシテ大部分單條ヲナシ夫ヨリ長キ間隔ヲ置キテ一二回分叉シ、各部ハ其基部ヨリ頂部マデ兩縁ニ副枝ヲ存ス；副枝ハ甚シク長ク、單條又ハ長距離ヲ隔テ、分叉シ、稍地平ニ出デ、兩縁ヨリ左右ニ出ヅ而シテ小枝ヲ存セザルカ又ハ小ナル小枝ヲ存ス。斯ノ如キ形狀ノモノハ之ヲむかでのりト混ズルコトアルベシ、尤モ叉狀ニ分岐スルコトハむかでのりニハ普通ニハアラズトス。外形ハ斯ノ如ク兩者相似タルモノアレドモ體質ハ本種ノモノむかでのりヨリモ固クシテ遙ニ軟骨質ヲナス而シテむかでのりニ類シタル形狀ノモノニテモ四分胞子ハ幼キ副枝ニ集リテ老成部ニハ生ズルコトナシ、然ルニむかでのりニテハ四分胞子及ビ囊果ハ體ノ全面ニ平等ニ散布ス。

是ヲ以テ本種ハ一方ニハむかでのりト一方ニハ *Gr. dichotoma* 及他ノ關係種ノ屬スル *Section* トノ中間ニ立ツモノト見ルヲ得ベシ。

用途：本種ハ日本海ノ特産物ニシテ產地ニテハ酢、醬油ナドニテ生食スレドモ糊料ニ用ヰルヲ適當トス；其之ヲ淡水ニ浸ストキハ粘化スルヲ以テナリ。

第 CXVI 圖版. かたのり, *Grateloupia divaricata* Okam., ノ二個體, $\frac{1}{1}$.

第 CXVII 圖版, 12-18 圖. 12: 體ノ横斷面ノ一部, $\frac{220}{1}$.—13: 莖ノ横斷面ノ輪廓, $\frac{5}{1}$.—14: 四分胞子囊ヲ有スル小枝, $\frac{1}{1}$.—15: 同上ノ一部, 廓大, $\frac{5}{1}$.—16: 四分胞子囊ヲ有スル小枝ノ横斷面ノ一部, $\frac{220}{1}$.—17: 囊果ヲ有スル小枝, $\frac{1}{1}$.—18: 囊果, $\frac{54}{1}$.

Grateloupia ramosissima Okam. n. sp.

Nom. Jap.: *Sudzi-mukadè*.

PL. CXVII, Fig. 1-11.

Diagn.: Fronds caespitose, erect, loosely entangled, filiform, subcylindrical below, soon compressed above, somewhat flexuose, irregularly branched on all sides with a few dichotomous segments; branches elongated, patent, constricted at base and tapering to apex, loaded with short ramuli. Fruits of both kinds collected in ramuli. Cells are firmly coalesced and the substance is cartilaginous.

Hab.: On rocks near high tide between tide marks. Ama-mi-Oshima, Provs. Suruga, Sagami, Boshyu. *Fruits*: late spring to summer.

Descrip.: Fronds caespitose, rising from callous discs, forming a roundish cluster of more or less loosely entangled filiform branches, almost cylindrical at the base and compressed above, 15-20 cm. high, 1-1.2 mm. broad; irregularly branched on all sides in pinnate manner with a few dichotomous segments, with branches constricted at origin and tapering to a fine apex, widely patent, almost horizontal, somewhat flexuose or curved more or less loaded with lesser ramuli. Fronds consisting of three layers of cells; the medullary layer of loosely and longitudinally running filaments, gradually becoming denser outward; the subcortical layer of roundish cells, which pass into dichotomous moniliform filaments of the cortical layer. Cells are firmly coalesced and the dried frond long resists the action of water in reimmersion. *Tetraspores* and *cystocarps* densely collected in ultimate ramuli. Nucleus is rather smaller than that of other related species and the filamentous

tissue surrounding the nucleus is more thickly developed than allied species. *Colour* vinoso-purple fading to yellowish. *Substance* cartilaginous and firm becoming almost horny in dried state. Plant does not adhere to paper in drying.

Affinities: In habit the plant is allied to *Grateloupia filicina*, but widely different in consistence. The substance is more firm than *Gr. divaricata* Okam. with which the present plant shows some affinities.

PL. CXVII, Fig. 1-11. Fig. 1: frond of *Grateloupia ramosissima* Okam. n. sp., $\frac{1}{1}$.—Fig. 2: portion of the frond showing branches disposed on all sides, $\frac{1}{1}$.—Fig. 3: cross-section of the stem, $\frac{54}{1}$.—Fig. 4: portion of the cross-section shown in fig. 3, $\frac{220}{1}$.—Fig. 5: cross-section of an upper branch, $\frac{22}{1}$.—Fig. 6: tetrasporic ramuli, $\frac{5}{1}$.—Fig. 7: cross-section of a tetrasporic ramulus, $\frac{54}{1}$.—Fig. 8: portion of the same magd., $\frac{220}{1}$.—Fig. 9: cystocarpic ramuli, $\frac{1}{1}$.—Fig. 10: cross-section of a cystocarpic ramulus, $\frac{22}{1}$.—Fig. 11: nucleus, $\frac{220}{1}$.

Grateloupia ramosissima 新種.

すぢむかで.

第 CXVII 圖版, 1-11 圖.

性質: 體ハ叢生シ直立シ, 緩ク紛亂シ, 絲狀ニシテ下部稍圓柱狀ヲナシ, 上部扁圓, 稍雌木狀ニ屈曲シ, 不規則ニ各方面ヨリ分岐シ, 僅ニ叉狀ノ枝ヲ有ス; 枝ハ長クシテ, 廣開シ, 基部クビレ, 枝端尖リ, 短キ小刺ヲ存ス. 兩種ノ果實ハ小枝ニ群集ス. 細胞ハ固ク癒着シ軟骨質ナリ.

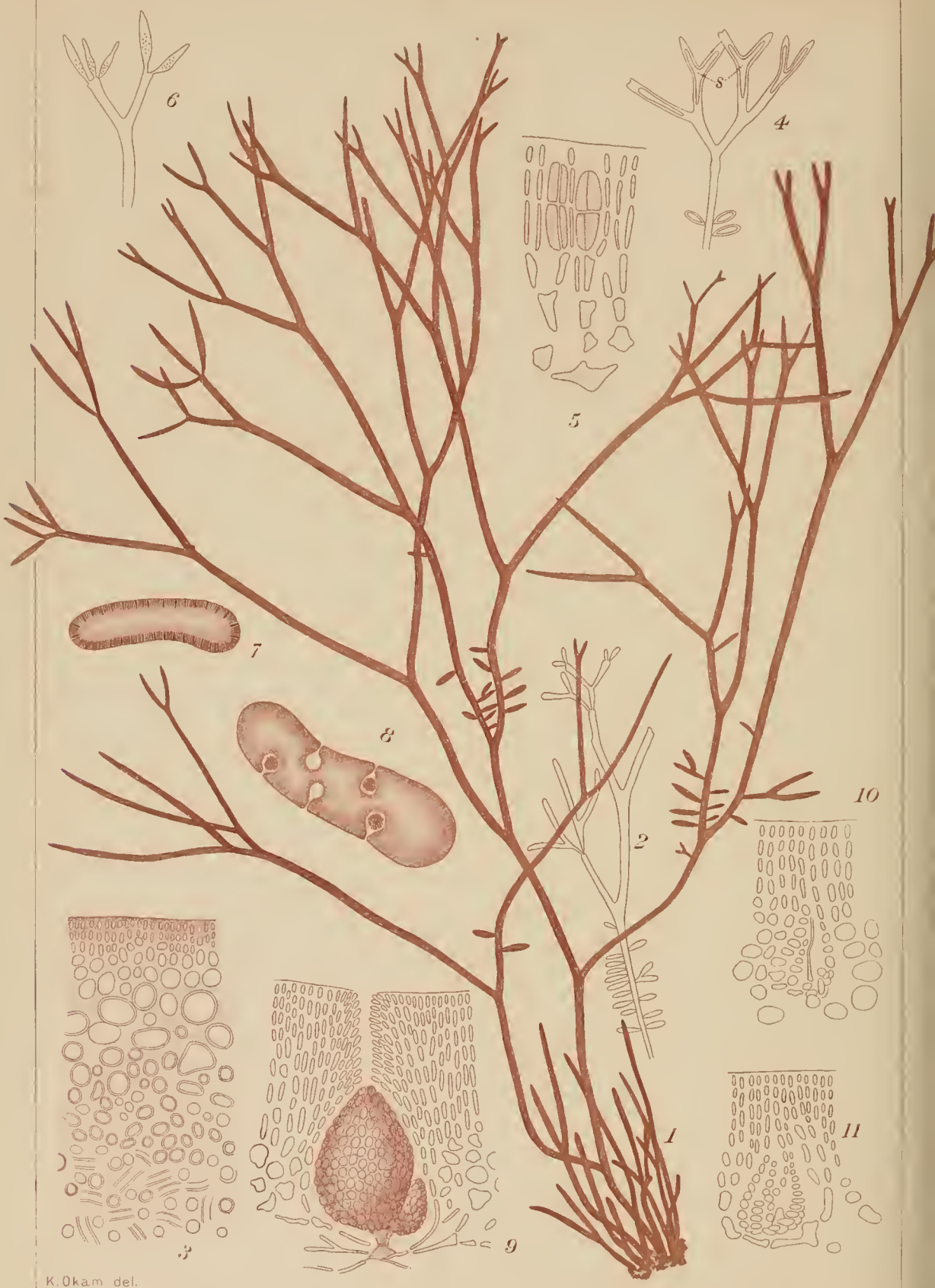


產地。潮線間ニ在リテ高潮線ニ近キ岩石ニ生ズ。奄美大島(多湖氏), 駿河大崩, 相州江ノ島, 三崎, 房州根本。果實: 一晚春ヨリ夏季。

體ハ叢生シ, 各小サキ殼狀根ヲ以テ立チ多少緩ク紛亂セル團塊ヲナシ, 線狀ニシテ基部殆ド圓柱狀, 上部扁壓シ, 各方面ニ不規則ニ羽狀ニ分岐シ僅ニ叉狀ノ枝ヲ有ス; 枝ハ基部クビレ, 枝端細ク尖リ, 廣開シ, 殆ド水平ニ出デ, 稍雁木狀ニ屈曲シ又ハウナリ, 多少小枝ヲ存ス; 高サ 15-20 cm. 太サ 1-1.2 mm. アリ。體ハ三層ヨリ成ル; 髓層ハ緩ク縱走セル絲ヨリ成リ漸次外方ニ密ナリ; 皮下層ハ圓キ細胞ヨリ成リ, 皮層ハ念珠狀ニ連ナレル叉狀ノ絲ヨリ成ル。細胞ハ堅ク結合シ, 乾燥シタル標品ヲ再ビ淡水ニ浸スモ永ク其形狀ヲ維持ス。四分胞子及囊果ハ最末小枝ニ密集ス。仁ハ他ノ類似ノ種類ノモノヨリモ稍小ニシテ其周圍ヲ圍繞セル絲組織層ハ他ノ種類ヨリ厚シ。色ハ暗紫色ニシテ往々褪色シテ黃色トナル。質ハ硬キ軟骨質ニシテ乾燥スルトキハ角ノ如シ; 體ハ乾燥スルトキハ紙ニ附着セズ。

外形ニテハ本種ハむかでのり, *Grateloupia filicina* ニ類ス, 然レドモ質ハ遙ニ之ト異ナリテ硬シ。體質ハかたのり, *G. divaricata* ヨリモ更ニ硬ク, かたのりハ本種ト幾分ノ類縁ヲ有ス。

第 CXVII 圖版, I-II 圖, 1: すぢむかで, *Grateloupia ramosissima* Okam. 新種ノ體, $\frac{1}{1}$.—2: 枝ノ各方面ヨリ出ルコトヲ示ス, $\frac{1}{1}$.—3: 莖ノ横斷面, $\frac{54}{1}$.—4: 3 圖ノ一部, $\frac{220}{1}$.—5: 上部ノ枝ノ横斷面, $\frac{22}{1}$.—6: 四分胞子ヲ有スル小枝, $\frac{5}{1}$.—7: 同上ノ横斷面, $\frac{54}{1}$.—8: 同上ノ一部, $\frac{220}{1}$.—9: 囊果アル小枝, $\frac{1}{1}$.—10: 同上ノ横斷面, $\frac{22}{1}$.—11: 仁, $\frac{220}{1}$.



K. Okam. del.

6 7 8 9 5 2 1 4 11 10

Gratuloplia cornea Okam. sp. nov. つのむかで

Grateloupia cornea Okam. n. sp.

Nom. Jap.: *Tsuno-mukadé*.

PL. CXVIII.

Diagn.: *Fronde* high, caespitose, linear, compressed, more or less stipitate, many times dichotomous, patent, bifid or emarginate, with simple or forked proliferous ramuli on both sides which are constricted at the base. *Cystocarps* and *tetraspores* collected in terminal segments and proliferous ramuli. Tetrasporic sori linear or linear-oblong. Filamentous tissue surrounding the nucleus is rather weakly developed. *Substance* is almost horny and the plant long resists the action of water.

Hab.: On rocks near high tide between tide marks. Provs. Tōtōmi, Sagami, Boshyu, Kadzusa, Hitachi and Rikuzen. *Cystocarps* and *tetraspores*: summer.

Descrip.: *Fronde* caespitose, rising from callous discs, erect, linear, compressed, 15–20 cm. high and 1–2 mm. broad, more or less stem-like below, many times regularly dichotomous, often flabellate in outline, patent, with lower dichotomies more distant than the upper and ending in bifid or emarginate blunt apices, with simple or forked proliferous ramuli, constricted at the base, arising from both sides of branches and from harmed ends. Structure of the frond is that of the genus; medullary filaments are more or less loosely set, surrounded by larger and roundish sub-cortical cells which are covered by dichotomous moniliform filaments of the cortical layer. All the cells are firmly coalesced and the plant long resists the action of water. *Tetraspores* and *cystocarps* are collected in terminal segments or in proliferous ramuli. Tetra-

spores are collected in linear or linear oblong sori. Carpogonial branches and auxillary cells are formed at the base of the cortical filaments which descend below into the cavity produced in the subcortical layer. Auxillary cells are single and conical in shape and are abundantly prepared. Filamentous tissue surrounding the nucleus is weakly developed. *Colour* vinoso-purple. *Substance* cartilaginous and almost horny when dried. Plant does not adhere to paper in drying.

Affinities: Allied to *Grat. divaricata* Okam., but more cartilaginous in the substance and the plant in question is the firmest of the genus as is known at present.

PL. CXVIII. Fig. 1: frond of *Grateloupia cornea* Okam. n. sp., $\frac{1}{1}$.—Fig. 2: portion of the frond showing proliferous ramuli, $\frac{1}{1}$.—Fig. 3: portion of the cross-section of frond, $\frac{390}{1}$.—Fig. 4: terminal segments bearing tetrasporic sori, $\frac{1}{1}$.—Fig. 5: tetraspores, $\frac{390}{1}$.—Fig. 6: cystocarpic ramuli, $\frac{1}{1}$.—Fig. 7: cross-section of a tetrasporic ramulus, $\frac{22}{1}$.—Fig. 8: cross-section of a cystocarpic ramulus, $\frac{22}{1}$.—Fig. 9: cystocarp, $\frac{220}{1}$.—Fig. 10: carpogonial branch, $\frac{390}{1}$.—Fig. 11: auxillary cell, which is represented with contents, $\frac{890}{1}$.

Grateloupia cornea Okam. 新種.

つ の む か で. 岡村 稱.

第 CXVIII 圖版.

性質: 體ハ高ク, 叢生シ, 線狀, 扁壓, 下部多少莖狀ヲナシ, 數回叉狀ニ分歧シ, 廣開シ, 枝端二裂シ又ハ淺ク窪ミ, 枝ノ兩側ヨリ副枝ヲ生ズ; 副枝ハ單條又ハ叉狀ヲナシ基部クビレタリ.

四分孢子及囊果ハ頂端ノ枝及ビ副枝ニ集リ生ズ。四分孢子群ハ線狀又ハ線狀—長楕圓形ナリ。仁ヲ圍繞スル絲組織ハ僅ニ形成セラル。質ハ乾燥スルトキハ殆ド角質ニシテ水ニ浸ストモ永ク之ニ耐ユ。

產地：潮線間ニ於テ高潮線ニ近キ岩石ニ生ズ。遠江御前岬、相模江ノ島、三崎、房州根本、上總小濱、常陸助川、大津、小名濱、陸前菖蒲田、小友。果實：—夏季。

體ハ叢生シ、殻狀根ヨリ立チ、線狀、扁壓、15-20 cm. 高ク、幅1-2 mm. アリ、下部多少莖狀ヲナシ、數回正シク又狀ニ分レ、往々扇狀ヲナスコトアリ；枝ハ廣開シ、下部ノ又枝ハ遠ク距リ、上部ノモノハ漸ク接近シ、枝端ニ裂シ又ハ淺クニ裂ス；枝ノ兩側及害ヲ被リタル枝端ヨリ副枝ヲ生ズ；副枝ハ單條又ハ分叉シ、基部クビレタリ。體ノ構造ハ屬ノ性質ノ如ク成レリ；即チ、髓部ノ絲狀細胞ハ多少緩ク、皮下層ノ細胞ハ稍大ニシテ且圓ク、皮層ハ念珠狀ニ連ナレル又狀ノ絲ヲ以テ成ル；總テノ細胞ハ堅ク結合シ、體ハ永ク水ニ浸サル、モ解頽スルコトナシ。四分孢子及囊果ハ頂部ノ枝及副枝ニ集リ生ズ。胎原列及助細胞ハ皮層ノ絲ノ基部ニ形成セラレ、恰モ3-4條ノ念珠狀ノ皮層絲ニテ吊リ下ゲタル如クナリテ、皮下層ニ設ケラレタル空所ニ存ス。助細胞ハ一個ニシテ圓錐形ヲナシ多數ニ形成セラル。仁ヲ圍繞スル絲狀組織ハ僅ニ形成セラル。色ハ暗紫紅色ナリ。質ハ軟骨質ニシテ乾燥スルトキハ殆ド角ノ如ク乾燥スルトキハ紙ニ附着セズ。

かたのり、*Gr. divaricata* ニ類スレドモ質一層軟骨質ニシテ從來知ラレタル本屬ノモノ、中ニテハ最モ硬シトス。

第 CXVIII 圖版。 1: つのむかで, *Grateloupia cornea* Okam. 新種

ノ體; $\frac{1}{1}$.—2: 副枝ヲ有スル枝ノ一部, $\frac{1}{1}$.—3: 體ノ横斷面ノ一部, $\frac{390}{1}$.—4: 四分胞子群, s , ヲ有スル頂端ノ枝, $\frac{1}{1}$.—5: 四分胞子囊 $\frac{390}{1}$.—6: 囊果ヲ有スル小枝, $\frac{1}{1}$.—7: 四分胞子ヲ有スル小枝ノ横斷面, $\frac{22}{1}$.—8: 囊果ヲ有スル小枝ノ横斷面, $\frac{22}{1}$.—9: 囊果, $\frac{220}{1}$.—10: 胎原細胞, $\frac{390}{1}$.—11: 助細胞, 内容ヲ有スルモノ是ナリ, $\frac{390}{1}$.

Caulerpa racemosa Weber van Bosse *var. clavifera*
f. macrophysa Weber van Bosse.

Nom. Jap.: *Sennari-dzuta*.

PL. CXIX, Fig. 1.

Caulerpa racemosa Weber v. Bosse *var. clavifera f. macrophysa*
Weber v. Bosse Monogr. d. Caul. p. 361, Pl. XXXIII, f. 1-5.—
Fucus clavifer Turner Hist. Fuci t. 57.—*Caulerpa clavifera* Ag.;
Harvey Ner. Bor. Amer. p. 19; Zanard. Pl. Mar. rubr. p. 285; J.
Ag. Till Alg. Syst. I, p. 36; Svedelius Ecolog. and Syst. Stud. of
the Ceylon Sp. of Caul. p. 120; De Toni Syll. Alg. I, p. 476.—
Chauvinia clavifera Kütz. Tab. Phyc. Vol. VII, t. 14, fig. b.—
Chauvinia macrophysa Kütz. l. c. VII, t. 15, f. II.

Hab.: Okinawa-shima (Ryukyu), Pratas Isl. (Taiwan).

PL. CXIX. Fig. 1: fronds of *Caul. racemosa var. clavifera f. macrophysa* Weber van Bosse, $\frac{1}{1}$.



K.Okam. del.

3 7 9 4 1 6 5 2 8
 Caulerpa racemosa var. clavifera f. macrophysa Weber van Bosse せんかりづた Fig. 1.
 Caulerpa racemosa var. laete-virens Weber v. Bosse すりこぎづた Fig. 2-5.
 Caulerpa Webbiana f. tomentella Weber van Bosse こけいわづた Fig. 6-9.

Caulerpa racemosa Weber van Bosse *var. clavifera*
f. macrophysa Weber van Bosse.

せんなりづた.

第 CXIX 圖版, 1 圖,

體ハ太キ又ハ細キ裸出セル匍枝ヨリ立ち, 概チ單條, 各方面ニ「ラメント」ヲ有シ, 「ラメント」ハ稍距リテ出デ, 時ニ互生シ又ハ稍對生スルコトアリ其大サハ其之ヲ支持スル軸(即チ枝)ノ太サト同ジキコトアレドモ多クハ球狀又ハ茄子狀ニシテ頂端圓ク, 短柄ヲ有ス, 直徑 3-5 mm. アリ.

產地: 多分淺所ノ岩石ニ附着スルナルベシ. 臺灣プラタス島(川上氏); 琉球(黒岩氏, 三宅氏).

分布: 熱帶ノ海ニ産ス; 紅海, 印度洋, グアデループ, パダン, マカツサール, サモア, パタピア; 太西洋(米國沿岸).

第 CXIX 圖版, 1 圖: せんなりづた, *Caul. racemosa var. clavifera f. macrophysa* Weber v. Bosse ノ體, $\frac{1}{2}$.

Caulerpa racemosa Weber van Bosse *var.*
laete-virens Weber van Bosse.

Nom. Jap.: *Surikogi-dzuta*.

PL. CXIX, Fig. 2-5.

Caulerpa racemosa var. laete-virens Weber van Bosse Monogr.
d. Caul. p. 366, Pl. XXXIII, f. 8, 16-22.—*C. laete-virens* Mont.;

J. Ag. Till Alg. Syst. I, p. 34; Svedelius Ecol. a. Syst. Stud. of the Ceyl. Sp. of Caul. p. 124; De Toni Syll. Alg. I, p. 474.—*C. cylindracea* Sond., Harv. Phyc. Austr. Pl. XXX; J. Ag. Till Alg. Syst. I, p. 34; De Toni Syll. Alg. I, p. 474.—*C. cylindracea* var. *macra* Harv. Phyc. Austr. Pl. XXX, f. 2.—*Chauvinia lacte-virens* Kütz. Tab. Phyc. VII, t. 12, fig. II.—*Ch. cylindracea* Kütz. l. c., VII, t. 15, f. III.

Hab.: On rocks between tide marks: Ryukyu; Ogasawara jima; Provs. Kagoshima, Hyuga, Tosa; Sunosaki (Prov. Boshyu).

Some of the specimens have been identified by Mme. Weber van Bosse.

PL. CXIX, Fig. 2-5. Fig. 2: frond of *Caulerpa racemosa* var. *laete-virens* Weber van Bosse, $\frac{1}{1}$.—Fig. 3: another specimen, $\frac{5}{1}$.—Fig. 4: portion of the frond from Kagoshima, $\frac{1}{1}$.—Fig. 5: portion of fig. 5, magd., $\frac{3}{1}$.

***Caulerpa racemosa* Weber van Bosse var.
laete-virens Weber van Bosse.**

す り こ ぎ つ た.

第 CXIX 圖版, 2-5 圖.

體ハ裸出セル匍枝ヨリ立ち、匍枝ハ分岐ス；體ノ高サ 5-10 cm. ニ達シ、各方面ヨリ小枝ヲ覆瓦様ニ生ズルコト極メテ密ナリ；小枝ハ棍棒狀ニシテ其頂端ノ方ニ漸次太ク、或ハ杖ノ頭ノ如ク圓ク太ク若クハ留針ノ頭ノ如ク少シク大キク成リ又ハ全ク圓柱狀ナリ。

產地：潮線間ノ岩石ニ生ズ。琉球, 小笠原島, 鹿兒島及沖ノ小島(薩摩), 日向油津, 土佐, 房州洲ノ崎。

分布：太平洋熱帶部, 濠州, フレンドリー島, Toud 島, フネリツピン, セーロン; フロリダ; グアデループ。

本種ノ標品ハ嘗テ Weber 女史ニ送リテ鑑定ヲ經タリ。

第 CXIX 圖版, 2-5 圖。2: すりこぎづた, *Caulerpa racemosa* var. *laete-virens* Weber van Bosse ノ體, $\frac{1}{1}$ —3: 他ノ標品, $\frac{5}{1}$ —4: 鹿兒島灣内沖小島ノ標品, $\frac{1}{1}$ —5: 同上ノ一部, $\frac{3}{1}$ 。

Caulerpa Webbiana f. *tomentella* Weber van Bosse.

Nom. Jap.: *Koké-Iwadzuta*.

PL. CXIX, Fig. 6-9.

Caulerpa Webbiana f. *tomentella* Weber van Bosse. Monogr. d. Caul. p. 270, PL. XXI, f. 1-4.—*C. tomentella* Harv.; J. Ag. Till Alg. Syst. I, p. 8; De Toni Syll. Alg. I, p. 445.—*Chauvinia Webbiana* Kütz. Tab. Phyc. VII, f. 16, III.

Hab.: On rocks between tide-marks near high tide. Goto Isl., Provs. Hizen and Higo, Ogasawara-jima.

PL. CXIX, Fig. 6-9. Fig. 6: fronds of *Caulerpa Webbiana* f. *tomentella* Weber van Bosse, $\frac{1}{1}$.—Fig. 7: portion of the frond, $\frac{20}{1}$.—Fig. 8: cross-section of the frond, $\frac{42}{1}$.—Fig. 9: portion of a ramulus, $\frac{175}{1}$.

Caulerpa Webbiana f. *tomentella* Weber van Bosse.

こけいわづた.

第 CXIX 圖版, 6-9 圖.

體ハ矮小ニシテ匍枝ヨリ立ち, 匍枝ハ其全面ニ毛茸ヲ密生ス; 體ハ其輪廓圓柱狀ニシテ不規則ニ分岐シ, 各方面ニ圓柱狀ノ小枝ヲ輪生ス, 小枝ハ一圓周ヨリ 4-6 (概テ[4]) 條ヅ、出デ, 密ニ中軸ヲ蔽ヒテ相重疊シ, 小枝ノ基部ヨリ數回叉狀ニ分岐シ, 頂端鈍圓ニシテ微突頭ヲ存ス,

產地: 高潮線ニ近キ潮線間ノ岩石ニ生ズ, 五島宇久島, 肥前口ノ津, 野母; 牛深; 小笠原島,

分布: 太平洋, フレンドリー島, モーリシアス島,

體ノ外觀恰モ蘚ノ如ク, モサモサトシテ, 海綿ニ觸ル如キ感アリ.

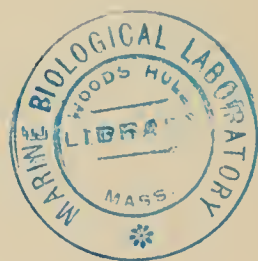
第 CXIX 圖版, 6-9 圖. 6: こけいわづた, *Caul. Webbiana* f. *tomentella* Weber van Bosse ノ體, $\frac{1}{1}$.—7: 體ノ一部, $\frac{22}{1}$.—8: 體ヲ横斷シテ小枝ノ輪生スルヲ示ス, $\frac{42}{1}$.—9: 小枝ノ一部, $\frac{175}{1}$.

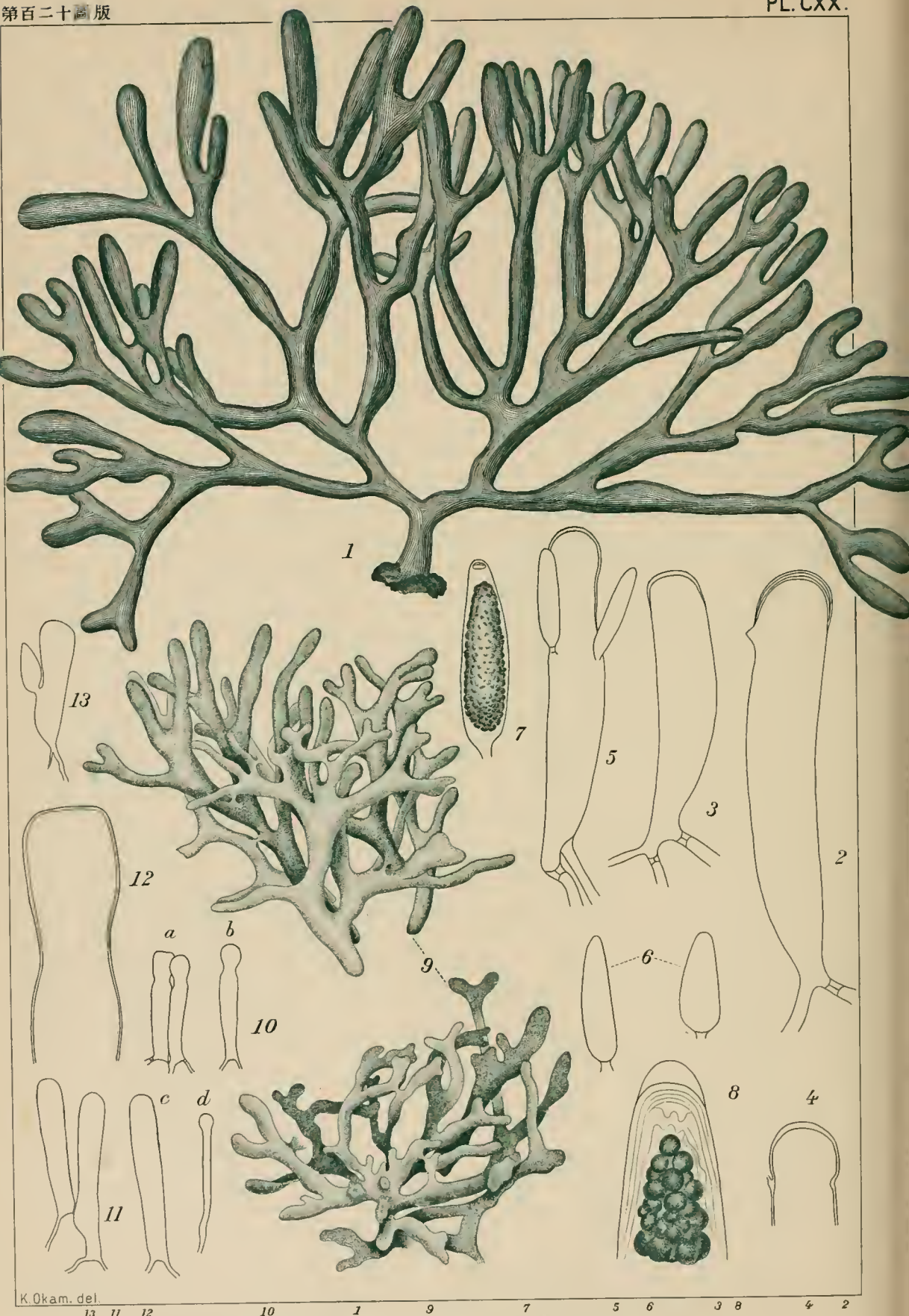
Codium contractum Kjellm.

Nom. Jap.: *Sakibuto-miru*.

PL. CXX, Fig. 1-8.

Codium contractum Kjellm. Marina chlorophyceer fra Japan 1897, p. 35, Tab. 2, fig. 12; tab. 7, fig. 1-3.





K. Okam. del.

Codium contractum Kjellm. さきふとみる Fig. 1-8.
Codium intricatum Okam. sp. nov. もつれみる Fig. 9-13.

Frond cylindrical, a little expanded only beneath forks, flabellately dichotomous, often trichotomous here and there, more or less swollen toward apical segments into subclavate shape, 10–17 cm. high, 3–5 mm. in diameter. Utriculi cylindrico-clavate, 140–165 μ broad at the apex, 5–7 times as long as broad, not much thickened and obtuse or subtruncated at apex. Sporangia ovato-fusiform, 90–290 μ long, 53–73 μ broad, situated above the half way. *Colour* deep green. *Substance* thick and tough.

Hab.: On rocks between tide-marks (Bōshyu). Ryukyu, Futae (Amakusa Isl.), C. Shiwo (Prov. Kii), Enoshima and Boshyu; Prov. Tsushima, Prov. Idzumo, Prov. Tajima. *Fruit*: May—August. *Geogr. distr.*: Feuerland, Provenir (Svedelius).

Remarks: Among our species of *Codium* the present plant much resembles *Codium mucronatum* var. *californicum* in its cylindrical habit and is often mistaken for it. The present plant is found in the warmer part of the country, while the species just spoken of has more wider range of distribution within our country.

PL. CXX, Fig. 1–8. Fig. 1: frond of *Codium contractum* Kjellm. in nat. size.—Fig. 2: utriculus with thickened apex, 163 μ broad at top, $\frac{91}{1}$.—Fig. 3: thin-walled utriculus, 140 μ broad, $\frac{91}{1}$.—Fig. 4: apex of an utriculus showing the thickness of apical wall, $\frac{91}{1}$.—Fig. 5: one bearing two gametangia, $\frac{54}{1}$.—Fig. 6: two of gametangia, 290 $\mu \times$ 54 μ and 91 $\mu \times$ 73 μ resp., $\frac{91}{1}$.—Fig. 7: gametangium, $\frac{91}{1}$.—Fig. 8: portion of the same magd., $\frac{390}{1}$.

Codium Stackh. 1759-1801.

み る 屬.

CODIACEÆ. み る 科.

體形極メテ種々ニシテ殼狀アリ、球狀アリ或ハ長大ニシテ分岐シ、圓柱狀又ハ扁平、明ナル莖ナク又明ニ分化シタル根ナク、全體海綿様ニシテ石灰質ヲ存スルコトナシ。體ハ全部管狀ノ絲ヨリ成リ、髓部ハ稍緩ク、表面ノ方ニ密ニ棍棒狀ノ囊ノ如キ枝ヲ發出シ、此モノ相集リテ皮層ヲナス、之ヲ胞囊 (Utriculi) ト云フ。體ノ全部管狀ニシテ各部相通ズト雖モ所々ニ細胞ノ内壁ニ偽隔壁ノ如キ厚ミヲ生ズル爲メ之ニ依テ多細胞ナル如キ觀ヲ呈ス。胞囊ノ幼キ者ハ其頂端ニ近キ部分ノ周圍ヨリ無色ノ毛ヲ生ジ、後脱落ス。「ガメート」囊ハ胞囊ノ側面ニ卵形ノ枝ノ如クナリテ形成セラレ、其基部ニ細胞膜ノ偽隔壁ノ如キ厚ミヲ生ズルニ依テ彼此ノ連絡ヲ絶ツ；上ニ云ヘル毛モ亦然リ；各個體ニ大ナル卵圓形ノ綠色ナル雌性「ガメート」囊若クハ小サキ黃色ノ雄性「ガメート」囊ヲ生ズ；雌雄トモ二條ノ纖毛ヲ有ス。「ガメート」ノ接合ハ未ダ明ニ認メラレズ。此他ノ生殖法ハ知ラレズ。

世界ニ 32 種アリ、中 11 種ハ本邦ニ産ス、何レモ熱帶若クハ溫帶ノ産ニシテ其多クハ太平洋ニ産シ我邦ニ産スルモノハ主トシテ濠州及太平洋諸島ノモノ多シ。——屬ノ名ハ Codion (絨毛ノ如キ皮) ヨリ成ル。

Codium contractum Kjellm.

もつれみる 岡村 稱

第 CXX 圖版, 1-8 圖.

體ハ圓柱狀ニシテ唯分岐點ノ所ノミ稍開展シ, 扇狀ニ叉狀ニ分岐シ, 所々三叉スル所アリ, 頂部ノ枝ハ多少膨レテ棍棒狀ヲナシ, 10-17 cm. 高ク, 3-5 mm. 太シ. 胞囊ハ圓柱狀—棍棒狀ニシテ, 其頂部ニ於テ $140-165 \mu$ 太ク, 幅ノ 5-7 倍長ク, 頂端多少増厚スレド著シカラズ, 鈍圓又ハ稍截形ナリ. 子囊ハ細長キ卵形—紡錘狀ニシテ $90-290 \mu$ 長ク, $50-73 \mu$ 太ク, 胞囊ノ中央部以上ニ在リ. 深綠色ナリ. 質ハ多肉ニシテ體太ク, 強靱ナリ.

產地: 房州ニテ潮線間ノ岩上ニ在リ. 琉球, 天草二江, 潮ノ岬, 相州江ノ島, 房州館山及白濱; 對馬, 出雲川下村(今市女子師範校), 但馬瀬戸.

分布: ホイエルランド, ポルベニール(Svedelius).

備考: 本種ハ其圓柱狀ナルヲ以テ *Codium mucronatum* var. *californicum* (みる)ニ酷似シ, 往々之ト誤認スルコトアリ; 然レドモ胞囊ノ頂端圓キト分岐點ノ稍扁キト並ニ枝端ノ太キトハ之ニ異ナリトス, 且ツ, 本種ハ暖部ニノミ産シみるノ如ク廣キ分布ヲ有スルコトナシ.

第 CXX 圖版, 1-8 圖. 1: *Codium contractum* Kjellm., さきふとみるノ體, $\frac{1}{1}$.—2: 頂端増厚セル胞囊, 頂部 163μ 太シ, $\frac{91}{1}$.—3: 頂端ノ厚カラザルモノ, 140μ 太シ, $\frac{91}{1}$.—4: 胞囊ノ頂部ノ厚サヲ示スモノ, $\frac{91}{1}$.—5: 二個ノ子囊ヲ有スルモノ, $\frac{54}{1}$.—6: 二個ノ子囊, 一ハ長サ 290μ 幅 54μ , 一ハ長サ 91μ 幅 73μ , $\frac{91}{1}$.—7: 子囊, $\frac{91}{1}$.—8: 子囊ノ一部, $\frac{390}{1}$.

Codium intricatum Okam. n. sp.

Nom. Jap. *Motsure-miru*.

PL. CXX, Fig. 9-13.

Diagn.: Frond large, creeping, compressed with broader segments, irregularly and divaricately dichotomous, deep-green, intricated by attaching to each other with root-fibres here and there; utriculi cylindrico-clavate, thin-walled at top, 5-6 times as long as broad; gametangia elongato-ovate.

Hab.: On rocks a little below low tide. Ryukyu, Prov. Hiuga (Yendo), Cape Nomo, Futae (Amakusa Isl.), Kashiwa-jima (Prov. Tosa, Shiihara), C. Shiwo (Prov. Kii), Hama-jima (Prov. Shima).

Descrip.: Frond creeping, compressed, irregularly dichotomous divaricately branched, densely intricated by attaching to each other with root-like filaments here and there emitted from the under-surface of segments and forms, in well-grown fronds, a low heap (2-3 cm. high) of irregularly roundish outline covering the substratum extending from 10 to 20 cm. Segments become gradually narrower toward extremities from basal broader portions where they attain 5-10 mm. or more in breadth. Utriculi cylindrical or cylindrico-clavate, obtuse or subtruncate and thin-walled at apex, sometimes a little constricted beneath apex. They measure 770-1150 μ in the broadest part, and 5-6 times as long as broad. Gametangia ovate. Colour deep-green. Substance soft to touch, and firmly adheres to paper in drying.

Affinities: As far as I know, there are three already known species of *Codium* which has creeping habit, viz. *C. dimorphum*

Sved., *C. repens* Crouan and *C. divaricatum* A. & E. S. Gepp (non Holmes). Of them, the present plant seems to me to show some affinities with *C. repens* Crouan on account of the creeping habit and longer, narrow, and clavate utricles of the latter as A. & E. S. Gepp mentions under *Codium divaricatum* A. & E. S. Gepp (The Codiaceae of the Siboga Expedition p. 136). Of that species, however, I know nothing but Vickers' description of it (Liste des Algues Marines de la Barbade p. 56, no. 37). *C. repens* seems to be very slender as A. & E. S. Gepp mentions under *C. divaricatum* that the latter (which has segments 1.5–0.5 mm. broad in dried state), resembles the former species in dimensions (A. & E. S. Gepp l. c.). Moreover *C. repens* is described by Vickers as tubulous (“tubuleuse”). Of *C. dimorphum* Sved. there is no need to tell much of its difference from the present plant. Thus the present species is different from all of those three related species.

PL. CXX, Fig. 9–13. Fig. 9: two pieces of frond of *Codium intricatum* Okam., one viewed from the upper surface, the other from the lower, $\frac{1}{1}$.—Fig. 10, a–d: different forms of utriculi, $\frac{5.4}{1}$.—Fig. 11: another utriculi, $\frac{5.4}{1}$.—Fig. 12: apical portion of an utriculus showing the thickness of wall, $\frac{22.0}{1}$.—Fig. 13: gametangium, $\frac{5.4}{1}$.

Codium intricatum Okam. 新種.

もつれみる 岡村 稱.

第 CXX 圖版, 9–13 圖.

性質: 體ハ大ニシテ, 匍匐シ, 扁圓ニシテ各部濶ク, 不規則ニ叉狀ニ分レ枝ハ廣ク離開シ, 深綠色ニシテ, 所々ヨリ根ノ如キ絲ヲ出シテ附着シ錯綜ス; 胞囊ハ圓柱狀—棍棒狀ニシテ頂端ノ膜薄ク, 太サノ 5–6 倍長シ; ガメート囊ハ長卵形ナリ.

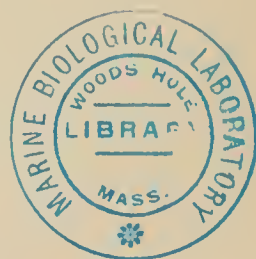
產地： 低潮線ノ少シク下ナル岩上ニ生ズ。 琉球,日向(遠藤),野母崎,天草島二江,土佐柏島(椎原),潮ノ岬,志摩濱島(東)。

記載： 體ハ匍匐シ,扁圓或ハ扁平,不規則ニ叉狀ニ分レ,枝ハ廣ク離開シ,枝ノ裏面ノ所々ヨリ根ノ如キ絲ヲ束狀ニ出シテ相互ニ癒着シ爲ニ錯綜ス。 斯クテ充分旺ニ成長シタルモノハ低キ饅頭形ノ塊ヲ爲シテ不規則ニ圓ク擴ガリ, 10-20 cm. ノ濶サニ及ビ,高サ 2-3 cm. ニ達ス。 枝ノ下部濶クシテ 5-10 mm. 若クハ尙ホ濶ク,漸次分岐スルニ從テ末端ノ方ニ狹シ。 胞囊ハ圓柱狀又ハ圓柱狀—棍棒狀ニシテ頂端鈍圓又ハ稍截形ヲナシ,時ニ頭部ニ僅ニ細クナレルコトアリ;其最モ廣キモノハ太サ 770-1150 μ ニ達シ太サノ 5-6 倍長シ。 ガメート囊ハ卵形ナリ。 色ハ深綠色。 質ハ手觸リ軟クシテ乾燥スルトキハ密ニ紙ニ附着ス。

類縁： 予ノ知ル處ニテハ,從來既ニ知ラレタルみる屬ノモノニシテ匍匐スルモノハ三種アリ:即チ *Codium dimorphum* Sved., *C. repens* Crouan 及 *C. divaricatum* A. & E. S. Gepp (Holmes ノニアラズ) 是ナリ。 此等ノ中 *C. repens* ハ胞囊長ク細クシテ棍棒狀ナリトノ點ニ於テ本種ト或類縁ヲ有スルモノ、如ク思ハル;其胞囊ノ形狀ハ A. & E. S. Gepp ガ *The Codiaceae of the Siboga Expedition* p. 136 ニ於テ *C. divaricatum* A. & E. S. Gepp ノ條下ニ記ス所ニ依テ之ヲ知ルノミ;而シテ *C. repens* ニ就テハ予ハ Vickers 氏ガ *Liste des Algues Marines de la Barbade* p. 56, no. 37 ニ於テ記載シタルモノ、外知ル所ナシ。 *C. repens* ハ A. & E. S. Gepp ガ前記ノ書中 *C. divaricatum* A. & E. S. Gepp ノ條下ニ前者ハ其細キコトヲ以テ後者ニ類スト云ヘルヲ以テ其細キコトヲ知ル (*C. divaricatum* A. & E. S. Gepp ハ乾燥品ニテ 1.5-0.5 mm. 太シト云フ)。 *C. dimorphum* Seved. ト本種トノ差異ニ就テハ多ク云フヲ要セザル程明ナリ。

之ニ依テ本種ハ以上三種ノ何レニモ類セザルモノト云フベシ.

第 CXX 圖版, 9-13 圖. 9: *Codium intricatum* Okam., もつれみる, ノ二破片ニシテ一ハ表面ヨリーハ裏面ヨリ見タルモノ, $\frac{5.4}{1}$. —10, *a-d*: 胞囊ノ種々ノ形狀, $\frac{5.4}{1}$. —11: 尙ホ一ノ胞囊, $\frac{5.4}{1}$. —12: 胞囊ノ頂端ヲ廓大シテ膜ノ厚ミヲ示ス, $\frac{2.20}{1}$. —13: ガメート囊, $\frac{5.4}{1}$.





Tichocarpus crinitus (Gmel.) Rupr.

かれきぐさ



Tichocarpus crinitus (Gmel.) Rupr.

かれきぐさ。

Tichocarpus crinitus (Gmel.) Rupr.

Nom. Jap.: *Kareki-gusa*.

PL. CXXI—CXXIII, Fig. 1-8.

Tichocarpus crinitus (Gmel.) Rupr. Tange d. Ochot. Meeres p. 320, t. 17; J. Ag. Epicr. p. 284; Id. Florid. Morphol. t. XVIII, f. 8; Schmitz in Engl. u. Prantl Pflanzenfam. Algae, p. 381; De Toni Syll. Alg. IV, p. 385.—*Prionitis?* *crinita* J. Ag. Sp. Alg. II, p. 191.—*Fucus crinitus* (*F. crinatus*) Gmel. Fuci p. 160 t. 18, f. 2.—*Fucus crinitus* Gmel., Turn. Hist. Fuci t. 123.—*Gelidium crinitum* Kuetz. Sp. Alg. p. 766; Id. Tab. Phyc. XVIII, t. 45.

Plants more or less variable in habits and size, attaining the height of 15–30 cm. *Fronds* densely caespitose rising from callous disc, linear, compressed, almost flat in some specimens, somewhat thickened in others in the median line and then ancipitous, and often in fully grown larger fronds the most parts of the lower portion of the frond become almost cylindrical appearing like the stem. Fronds forked more or less immediately adjoining the root and afterwards repeatedly divided at mostly short, but uncertain, intervals, in an irregularly dichotomous manner, with patent segments besides which, scattered branches, between horizontal and patent, of most uncertain length, some simple, others divided, arise here and there from the side of the larger ones. Branches are in some slender and linear, (1–1.5 mm broad) in others more broad, and often especially so towards the forks (even 5–6 mm broad in dried specimens). The apices of all the branches and branchlets are as a rule slender and pointed, sometimes obtuse and truncated, more so in older fronds; the margin quite entire, naked below, but towards the summits fringed on both sides (also proliferated

from both surfaces) with distichous, horizontal ramuli, 2–15 mm. long, placed close to each other, nearly cylindrical, either filiform or slightly thickened upwards and simple or branched; some fronds are quite free from them. *Cystocarps* terminal on short, simple or branched, ciliary processes closely set on both sides of branches; cystocarpic fronds are furnished with such short processes only. *Colour* brownish-red, turning to almost black in drying. *Substance* cartilaginous and the plant does not adhere to paper in drying.

Hab.: eastern and western coasts of of Kabafuto (Saghalien); Isls. Shimushu, Urupp and Etrofu; Urakawa (Prov. Hidaka), Akkeshi and Hamanaka (Prov. Kushiro), Otaru. *Cystocarps*:—June.

PL. CXXI-CXXII. Pl. CXXI and CXXII Fig. 1–2 different forms of sterile fronds of *Tichocarpus crinitus* (Gmel.) Rupr., in nat. size.—Fig. 3: portion of the cystocarpic frond, $\frac{1}{1}$.

PL. CXXIII, Fig. 1–8. Fig. 1: upper portion of the sterile and much branched frond of *Tichocarpus crinitus* (Gmel.) Rupr., $\frac{1}{1}$.—Fig. 2: cross-section of the ramulus, $\frac{10}{1}$.—Fig. 3: cross-section of the lower portion of frond, $\frac{10}{1}$.—Fig. 4: portion of the longitudinal section of the frond $\frac{17.5}{1}$.—Fig. 5: portion of the cross-section of frond, $\frac{17.5}{1}$.—Fig. 6: cystocarps, $\frac{5}{1}$.—Fig. 7: longitudinal section of the cystocarp, $\frac{42}{1}$.—Fig. 8: sporic-filaments, $\frac{17.5}{1}$.

Tichocarpus Ruprecht. かれきぐさ屬.

TICHOCARPEÆ (SPHÆROCOCCACEÆ).

かれきぐさ亞科, (たみみ科).

體ハ扁壓, 同一平面ニ叉狀ニ分岐シ, 兩縁ヨリ甚ダ密ニ副枝ヲ生ジ, 且ツ多數ノ短キ小羽枝ヲ出ス; 絲ト細胞トヨリ成ル.

髓ノ絲狀細胞ハ可ナリ細ク、相集リテ中央ニ紐條ヲナシ、内皮部ハ稍弛緩シ、多數ノ縦走セル細キ根様絲アリテ髓ト同様ノ構造ヲ有シ、皮層ノ絲ハ數回叉狀ヲナス。外皮層ハ細胞組織ニシテ密ニ相集リ、可ナリ厚キ層ヲナシ、外方ニハ漸次細胞ノ大サヲ減ズ；皮層ノ細胞ハ内方ニ多ク連絡點ヲ存ス；體質ハ可ナリ緻密ニシテ固シ、——四分胞子ハ詳ナラズ。胎原列ハ縁邊ニ在ル小羽枝又ハ常態ノ枝ノ上部ノ一部中空ノ如ク弛緩シタル所ノ内側ニ一個若クハ數個形成セラレ、極メテ小ニシテ、皮層ヲ形成スル關節絲ノ細胞ノ一ニ附着シ、其部ノ上皮ハ肥厚ス；而シテ三個細胞ヨリ成リ、輕ク鈎狀ニ屈曲シ、外ノ方ニ膨レタル關節細胞ヨリ成ル。助細胞ハ皮層絲ニ形成セラレ、胎原列ニ近ク存シ、上ヨリ第二ノ關節細胞ヨリ成ル；其皮層絲ノ殘餘ノ關節細胞及其之ニ隣レル他ノ皮層絲ヨリ體ノ内部ノ方ニ極メテ澤山ノ短キ分岐セル絲ヲ出ス；此絲ハ短キ關節ヨリ成ル、而シテ其部ハ髓部ニ於テ殆ト腔所ノ如ク組織ノ弛緩シタル所ナリ。熟シタル助細胞ハ體ノ内部ノ方ニ成胞絲ヲ生ズ、即チ其附近ニ於テ先ヅ助細胞ニ最モ近ク存スル細胞ノ増大ヲ致シ、且ツ上ニ云ヘル短キ關節ヨリ成リテ分岐セル短キ絲ハ盛ニ其數ヲ増シ且分岐シ、此短キ絲ハ斯クテ密ニ集リテ低ク膨レタル扁キ隆起部ヲナス；此隆起部ハ體ノ内部ナル腔所ノ方ニ膨レ出デ、稍厚クナリタル皮部ノ内側ニ存ス。次ニ熟シタル助細胞ハ此胎座タル隆起部ノ中心ヨリーノ太キ突起ヲ出シ、其頂端少シク膨レ以テ胞子ヲ形成スル絲ヲ成ス、其胞子絲ハ短クシテ叉狀ニ分岐シ、互ニ集リテ束狀ヲナス；此胞子絲ハ相集リテ一個ノ半球狀ニ膨レタル仁ヲナシ、仁ハ扁ク隆起セル胎座ノ中央ヨリ只僅ニ突出ス；此胞子絲ノ末端ノ細胞胞子トナル。——囊果ハ一個若クハ數個囊ノ如ク膨レタル結實部ノ内部ニ形成セラレ、可ナリ厚クナリタル

皮層ノ内側ニ附着シ、其皮部ニ一個ノ極メテ小ナル果孔ヲ開ク、而シテ仁ハ甚ダ小ニシテ一ノ小ナル半球狀ニ隆起セル胞子塊ヨリ成リ、一ノ太キ仁柄細胞ニ依リテ果腔ノ壁ニ存スル胎座ノ中央ニ附着ス；胞子ハ半球狀ニ隆起セル仁ノ表面ニ形成セラレ胞子絲ノ頂端ニ存ス。

「オコツク」海ニ産スル下ノ一種ノミナリ。——屬ノ名ハ *teichos* (壁) ト *carpos* (果實) トヨリ成ル。

Tichocarpus crinitus (Gmel.) Rupr.

かれきぐさ 岡村 稱

第 CXXI—CXXIII 圖版, 1-8 圖。

體ハ多少形狀及ビ大サヲ變化シ、長サ 15-30 cm ニ達ス。體ハ殼狀根ヨリ密ニ叢生シ、線狀、扁壓、或標本ニテハ殆ド扁平ニ、他ノモノニテハ稍中央ニ増厚シテ兩縁ニ薄ク、充分老成セル大ナル體ニテハ往々體ノ下部ノ大部分ハ莖ノ如キ觀ヲ呈シテ殆ド圓柱狀ヲナス。體ハ多少根際ヨリ分叉シ、後屢概テ短距離ニ不規則ナル叉狀ニ分岐ス然レドモ其距離ハ一定ナラズ、又大ナル枝ノ側面ノ所々ヨリ枝ヲ散生ス；枝ハ廣開シ、往々水平ニ出デ、長サ不定ニシテ、時ニ單條、時ニ分岐ス。枝ハ或ハ細クシテ線狀、或ハ稍濶ク、又往々殊ニ分岐點ニ近ク廣シ（乾燥標品ニテ 5-6 mm ノ幅ヲ有スルモノサヘアリ）。枝及小枝ノ頂端ハ概テ細クシテ尖レルヲ常トスレトモ、時トシテハ鈍頭又ハ截形ヲナシ、老成セルモノハ殊ニ然リトス。縁邊ハ平坦ニシテ下部ノ兩側ニ小枝ナケレドモ、上方ニハ兩側ヨリ 2-15 mm 長キ小枝ヲ密生シ（又兩面ヨリ副枝ヲ生ジ）、小枝ハ水平ニ出デ、殆ド圓柱狀ニシテ、絲狀又ハ少シク上方ニ太ク、單條又ハ分





K. Okam. del.

2 6 3

4 5

9

7

10 1 8

Tichocarpus crinitus (Gmel.) Rupr. かれきぐさ Fig. 1-8.
Turnerella Mertensiana (Post. et Rupr.) Schm. えぞなめし Fig. 9-10.

岐ス;或標本ニテハ全ク縁邊ニ小枝ナキモアリ。囊果ハ短キ、單條又ハ分岐セル睫毛ノ如キ小枝ノ頂端ニ生ズ、此小枝ハ枝ノ兩側ニ密ニ相接シテ出ヅ而シテ囊果ヲ有スル體ハ只斯ノ如キ短キ小枝ノミヲ有ス。色ハ暗褐紅色ニシテ、乾燥スルトキハ殆ド黑色トナル。質ハ軟骨質ニシテ乾燥スルトキハ紙ニ附着セズ。

產地：樺太東西兩岸；占守島，得撫島，擇捉島，日高浦河，釧路厚岸及濱中，小樽。 囊果：一六月。

分布：オコツク海，カムサツカ。

第 CXXI—CXXII 圖版。 第 CXXI 及 CXXII 圖版 1-2：かれきぐさ，*Tichocarpus crinitus* (Gmel.) Rupr. ノ種々ノ形態，自然大。—3：囊果ヲ有スル體ノ一部， $\frac{1}{1}$ 。

第 CXXIII 圖版，1-8 圖。 1：多ク枝ヲ有スル實ナキ體ノ一部， $\frac{1}{1}$ 。—2：小枝ノ横斷面， $\frac{10}{1}$ 。—3：體ノ下部ノ横斷面， $\frac{10}{1}$ 。—4：體ノ縦斷面ノ一部， $\frac{17.5}{1}$ 。—5：體ノ横斷面ノ一部， $\frac{17.5}{1}$ 。—6：囊果， $\frac{5}{1}$ 。—7：囊果ノ縦斷面， $\frac{4.2}{1}$ 。—8：胞子ヲ形成スル絲， $\frac{17.5}{1}$ 。

Turnerella Mertensiana (Post. et Rupr.) Schmitz.

Nom. Jap.: *Yesso-nameshi*.

PL. CXXIII, Fig. 9-10.

Turnerella Mertensiana (P. et R.) Schmitz syst. Uebers. Florid. (1889), p. 7; De Toni Syll. Alg. IV, p. 323.—*Iridaea*

Mertensiana P. et R. Illustr. Alg. p. 18, f. 33; Kuetz. Sp. Alg. p. 727.—*Schizymenia Mertensiana* J. Ag. Sp. II, p. 174; Id. Epicr. p. 121.

Frond broadly expanded, 20–30 cm. or more in dimension, leathery, irregularly lobed and undulato-plicated, sinuose with large and obtuse lobes, umbilicately fixed at margin and sessile. *Cystocarps* dot-like, densely scattered and immersed in the substance of the frond. *Colour* deep blood-red, becoming darker in older fronds. *Substance* thick, leathery and tough, and the dried specimens long resist the action of water in reimmersion; plant does not adhere to paper in drying.

Hab.: Isl. Etrofu, Shizukawa (Prov. Rikuzen).

PL. CXXIII, Fig 9–10. Fig. 9: frond of *Turnerella Mertensiana* (P. et R.) Schmitz, $\frac{1}{3}$.—Fig. 10: portion of the cross-section of frond showing neucleus and glandular cell, c , $\frac{240}{1}$.

Turnerella Schmitz.

ゑぞなめし屬.

RHODOPHYLLIDACEÆ. とさかのり科.

體ハ葉狀、扁平、分裂スルコトナク又ハ不規則ニ分裂シ、粘滑ニシテ柔ク、或ハ革質；細胞ト絲トヨリ成ル：即チ髓ノ絲ハ細クシテ緩ク錯綜シ、之ト同様ノ形セル根様絲ヲ伴ヒ、可ナリ厚キ髓層ヲナス。皮部ハ内方ニハ大ナル細胞ヨリ成リテ緩ク、外方ニハ漸次外方ニ小形トナル細胞ヲ以テ密ニ集リ、内皮部ニハ概子多數ノ可ナリ大ナル細胞ヨリ成レル根様絲ヲ伴

ヒ、外皮層ハ多少明ニ表面ニ直角ヲナス。皮層中ニハ種々ノ發達ノ程度ニ在ル腺質細胞ヲ甚ダ多數ニ存ス。——四分孢子囊ハ詳ナラズ。囊果ハ體ノ表面ニ散在シ、微ニ外部ニ隆起ス。仁ハ大ニシテ多數ノ根様細胞ヲ存シ、別ニ之ヲ圍繞スル絲組織ナシ。仁ノ中心ニ小ナル中心細胞アリテ之ヨリ複總狀ニ分岐セル枝ヲ各方面ニ放射狀ニ生ジ、此枝互ニ相密集シ、少數ノ中性ノ絲アリテ仁ノ各孢子ノ團塊ノ間ニ介在シテ之ヲ區分ス、此各方面ニ放射狀ニ出タル孢子絲ノ頂端ノ細胞孢子トナル。果皮ハ其部ノ上皮ノ著シク厚クナリタルモノヨリ成リ、頂端ニ一孔ヲ開ク。

約五種アリテ太平洋ノ北部及北氷洋ニ産ス、一屬ノ名ハ海藻學者 Turner 氏ノ名譽ノ爲ニ附シタルモノナリ。

Turnerella Mertensiana (Post. et Rupr.) Schmitz.

えぞなめし 岡村 稱。

第 CXXIII 圖版, 9-10 圖。

體ハ葉狀ニシテ大キク展ガリ、20-30 cm 若クハ夫以上アリテ、革質、不規則ニ分裂シ、波狀ニ褶ヲナシテ皺ヲ有シ、裂片ハ大ニシテ鈍頭、體ノ緣邊ニテ他物ニ附着シ、無柄ナリ。囊果ハ點狀ニシテ密ニ表面ニ散在シ體中ニ埋在ス。色ハ濃キ鮮血色ニシテ老成セルモノニテハ稍黑色ヲ帶ブ。質ハ厚ク、革質ニシテ強靱；表面ハ滑澤ナレドモ體ノ全面ニ小サキ點々ノ如キモノアリテ微ニ隆マレル爲メ稍ザラザラスル感アリ；一旦乾燥シタル標品ヲ再ビ水中ニ投ズルモ永ク解頽スルコトナク、體ハ乾燥スルトキハ紙ニ附着セズ。

產地： 擇捉島、陸前志津川。

分布： カムサツカ、北太平洋ノ北部。

備考： 本種ハ俗ニおほばつのまたト稱スルモノ即チ學名たんばのりト形狀ハ同ジカラザレドモ其廣ク大ナル點ヲ以テ幾分類似スル所ヨリおほばつのまたノ產地ニ於テ北海道邊ヨリ來レル此藻ヲ混ジテ東京ノ糊料海藻問屋ニ輸送ス即チ五月頃專ラ上總御宿、岩和田等ヨリ兩者ヲ送り來ルト云フ；當業者ハのろめ又ハふんどしノ名ヲ以テ本植物ヲ區別シ其水ニ溶解セザルコトヲ熟知ス。 本種ハ皮層中ニ小サキ腺質細胞(一種ノ含有物ヲ以テ充テル椎ノ實狀ノモノ)アリテブツブツト少シク隆起シ、體ノ表面ヲ日光ニ透シテ視ヘバ其點々ノ所ハ少シク淡黃色ヲ帶ビテ透視セラル、ヲ以テ一見他ト區別スルニ足ル。

第 CXXIII 圖版。 9: ぬぞなめし, *Turnerella Mertensiana* (P. et R.) Schmitz ノ體, 縮圖, $\frac{1}{3}$ 。—10: 體ノ横斷面ノ一部, 仁ト腺細胞, c, トヲ示ス, $\frac{240}{1}$ 。

Gloiosiphonia capillaris (Huds.) Carmichael.

Nom. Jap.: *Ito-funori*.

PL. CXXIV, Fig. 1-13.

Gloiosiphonia capillaris (Huds.) Carm. in *Berk. Glean of British Algae* p. 45, t. 17, f. 3; Harv. *Phyc. Brit.* t. LVII; Johnst. and Croall *British Seaweeds*, II, p. 79, t. 97; J. Ag. Sp. II, p. 161; Id. *Epier.* p. 116; Id. *Florid. Morph.* t. 4, f. 14-16; Kütz.



K. Okam, del.

2 10 15 9 17 14 18 11 1 21 20 7 6 5 8 12 4 16 19 22 13 3

Gloiosiphonia capillaris (Huds.) Carm. イトノリ Fig. 1-13.

Ceramium japonicum Okam. はねいぎす Fig. 14-22.

Sp. p. 714; Id. Tab. Phyc. XVI, t. 67.—De Toni Syll Alg. IV. p. 1530.—*Fucus capillaris* Huds. Turn. Hist. Fuci t. 31.—*Gigartina lubrica* Lyngb. Hydroph. p. 45, t. 12 A.—*Gigartina capillaris* Lamour. Essai (Sec. Kütz.)

Fronds numerous from the same base, 10–20 cm high, very weak, gelatinous, cylindrical, filiform, somewhat tubular, 1–1.5 mm. thick, each rising with a single undivided stem, lower portion sometimes naked or beset from base to summit with branches rather loosely disposed on all sides in alternate, sometimes opposite manner, 3–7 cm. long, the whole branches densely furnished with a series of shorter branches similar to them in every respect, and those again with simple, short, subulate ramuli; the branches and ramuli are all between erect and patent, slightly attenuated at their bases, and remarkably acuminate at the apices. In the growing portion of branch, cortical cells carry slender, one-celled, hyaline, deciduous hairs.—*Cystocarps* dot-like, densely scattered and immersed beneath the cortical layer. *Colour* pinkish-red, soon turning to brick-red in decaying. *Substance* very tender, slippery, almost gelatinous, and the frond breaks down soon in decaying into pieces.

Formation of Cystocarps. Procarp is formed as a branch of two-sidedly branching auxiliary cell-branch which is laterally supported on the side of an infracortical filament arising verticillately from the central axis. It consists of 3 or 4 cells, of which hypogean cell is larger and laterally elongated. Auxiliary cell is prepared as a larger, roundish, intercalary cell beneath the curved apex of auxiliary cell-branch. Spore-filaments are produced in a paniculate manner either from fertilized and non-fused auxiliary cell or from fused cell which results from the fusion of an auxiliary cell and sterile cells adjoining it. Even when auxiliary cell

does not enter into fusion with other cells, they become almost empty in their contents. Neucleus is simple, globular mass, covered by slightly elevated cortical layer on that part.

Hab.: On rocks between tide-marks near high tide. Prov. Hizen, Prov. Tosa, Prov. Iyo, Kobe, Hamashima (Prov. Ise), Prov. Shima, Prov. Noto, Prov. Rikuzen. Hakodate,

PL. CXXIV, Fig. 1-13. Fig. 1: smaller frond of *Gloiosiphonia capillaris* (Huds.) Carn. with reduced ramuli, $\frac{1}{1}$.—Fig. 2: cortical cells carrying hyaline hairs, $\frac{390}{1}$.—Fig. 3: cross-section of branch, $\frac{220}{1}$.—Fig. 4: longitudinal section of branch with 2 cystocarps, $\frac{140}{1}$.—Fig. 5: apical portion of branch showing hyaline hairs, $\frac{600}{1}$.—Fig. 6: procarp and auxiliary cell-branch *in situ*; *a*, auxiliary cell, *h*, hypogenal cell, $\frac{600}{1}$.—Fig. 7-9: auxiliary cell branch and procarp detached; characters same as Fig. 6, $\frac{600}{1}$.—Fig. 10: sterile cells in auxiliary cell-branch becoming almost empty, $\frac{390}{1}$.—Fig. 11: spore-filaments abnormally produced from an auxiliary cell, *a*, $\frac{600}{1}$.—Fig. 12: neucleus produced from an auxiliary cell, $\frac{340}{1}$.—Fig. 13: spore-filaments paniculately produced from fused cell, *c*, $\frac{390}{1}$.

Gloiosiphonia Carmichael 1833.

いとふのり属.

GLOIOSIPHONIACEÆ. いとふのり科.

體ハ圓柱狀、側面ヨリ甚シク多ク分岐シ、粘滑柔軟、時トシテハ内部弛緩シ又ハ管狀中空、中軸ハ細ク、節間長ク、縦走セル根様絲ヲ以テ極メテ密ニ圍繞セラレ、輪生狀ニ出タル枝ヲ中軸ヨリ發シ、此枝外方ニ甚ダ密ニ分岐シ、相集リテ皮層ヲナシ、皮層ハ小サキ細胞ヲ以テ成ル; 内皮部ハ稍大ナル細胞ヨリ成

リテ組織ハ緩ク、根様絲ヲ存ス；中央ノ空所ハ時ニ少數、時ニ甚ダ多數ノ根様絲ヲ以テ充タサル。成長點細胞ハ横ニ分裂ス、——四分胞子囊ハ散在シ、十字様ニ分裂ス。胎原部ハ稍弛緩セル内皮層ニ存シ、二列ニ分岐セル助細胞ノ枝ト其側部ニ附着セル一個（稀ニ二個）ノ胎原列トヨリ成リ、助細胞ノ枝ハ短キ細胞ヨリ成リテ其鉤狀ニ屈曲セル頂端ニ近ク介生的ニ成セル助細胞ヲ存ス。囊果ハ體ノ上部ニ散在シ（稀ニ特殊ノ枝ニ存シ）内皮層ニ在リ；外皮ハ概テ只僅ニ隆起ス。仁ハ短キ柄ヲ以テ支持セラレ、球狀乃至腎臟形ニシテ密集シ、小仁ハ離レト々ニナラズシテ仁ハ一塊ヲナス。

約三種歐洲ノ西岸ト北亞米利加トニ在リ。下ノモノハ模範種ナリ。一屬ノ名ハ *Gloios* (粘質) ト *siphon* (管) トヨリ成ル。

Gloiosiphonia capillaris (Huds.) Carm.

いとふのり 岡村 稱。

第 CXXIV 圖版, 1-13 圖。

體ハ多數一ヶ所ヨリ叢生シ、10-20 cm 高ク、甚シク柔軟、粘滑、圓柱狀、絲狀、稍管狀ヲナシ、1-1.5 mm 太ク、各一條ノ莖ヲ以テ立チ、下部ハ時トシテハ枝ヲ存スルコトナク或ハ下部ヨリ頂端マデ全部枝ヲ有シ、枝ハ各方面ニ稍緩ク配列シ、互生又ハ對生シ、3-7 cm 長ク、枝ハ總テ短キ小枝ヲ以テ密ニ分岐シ、其小枝更ニ一層短キ且小ナル細キ小枝ヲ分岐ス；枝及小枝ハ總テ直上ト廣開トノ中間ノ位置ヲ以テ出デ基部少シク細ク枝端著シク細ク、總テ同一ノ形狀ヲ存ス。枝ノ成長點附近ノ皮層細胞ハ纖細透明ナル毛ヲ有シ、毛ハ一個細胞ヨリ成リ、單條、早落ス。——囊果ハ點狀ニシテ密ニ皮層下ニ散在ス。色ハ淡紅色、死スルトキハ忽チ赤煉瓦色トナル。質ハ甚柔軟ニシテ粘滑、

體ハ少シク時刻ヲ經過スルトキハ腐敗ニ傾キテ破片トナル。

囊果形成ノ順序。胎原列ハ二列ニ分岐セル助細胞列ノ枝トシテ生ジ、助細胞列ハ中軸ヨリ輪生スル皮層下ノ枝ノ側面ニ附着ス。胎原列ハ3-4個ノ細胞ヨリ成リ、胎心下細胞(hypogonadal cell)ハ大ニシテ横ニ伸長ス。助細胞ハ助細胞列ノ屈曲セル頂端下ニ介在スル稍大ナル球狀ノ細胞ヨリ成ル。胞子絲ハ熟シタル助細胞ヨリ複總狀ニ分岐シ、助細胞ハ他ノ細胞ト癒合スルコトナク或ハ其附近ノ中性細胞ト癒合ス。其癒合セザル場合ニ於テモ助細胞ノ附造ノ中性細胞ハ恰モ内容ヲ助細胞ニ提供シタルモノ、如クナリテ内容ハ極メテ稀薄ト成レリ。仁ハ單塊ニシテ球狀ノ塊ヲナシ、基部ノ皮層極メテ僅ニ隆起シテ以テ果皮ヲナス。

產地：高潮線ニ近キ潮線間ノ岩石ニ生ズ。島原及多比良(肥前)、土佐須崎、伊豫高濱、神戸、志摩石鏡、伊勢濱島、能登羽咋、函館、陸前米崎及大谷、陸中宮古。

分布：太西洋(那威ヨリ「スペイン」ニ至ル)；コダノ灣。

第 CXXIV 圖版, 1-13 圖。1: いとふのり, *Gloiosiphonia capillaris* (Huds.) Carm. ノ小サキ體ニシテ小枝ハ稍減ジタリ, $\frac{1}{1}$ —2: 皮層細胞ノ毛狀細胞ヲ有スル狀, $\frac{390}{1}$ —3: 枝ノ横斷面, $\frac{320}{1}$ —4: 枝ノ縱斷面, 二個ノ囊果アリ, $\frac{140}{1}$ —5: 枝ノ成長點ニ毛狀細胞アルヲ示ス, $\frac{600}{1}$ —6: 其位置ノマヽニ胎原列及助細胞列ヲ示ス; *a*, 助細胞; *h*, 胎心下細胞, $\frac{600}{1}$ —7-9: 胎原列ト助細胞列トヲ離シテ示ス; *a*, *h*, 等ハ6圖ニ同ジ, $\frac{600}{1}$ —10: 助細胞列中ノ中性細胞ノ内容殆ド空虚トナレルモノ, $\frac{390}{1}$ —11: 助細胞, *a*, ヨリ異常ニ發達シタル胞子絲, $\frac{600}{1}$ —12: 助細胞ヨリ仁ヲ形成スル狀, $\frac{340}{1}$ —13: 癒合シタル助細胞 *h*, ヨリ胞子絲ノ複總狀ニ出ル狀, $\frac{390}{1}$ 。

Ceramium japonicum Okam.

Nom. Jap.: *Hané-igisu*.

PL. CXXIV, Fig. 14-22.

Ceramium japonicum Okam. Contr. to Knowl. of the Mar. Alg. of Japan II. (Bot. Mag. Tokyo. Vol. X., No. 111) p. 38. Pl. III, f. 24-28.

“ *Roots* fibrous, monosiphonous, branching and expanding at extremity, forming a small conical disc. *Frond* epiphytic on larger algae, tufted, erect, cylindrical, thoroughly corticated, tapering and rooting at base, 6-11 cm high in sterile frond, 2.5-5 cm in fructified plant. Ramification is more or less irregularly and divaricately pinnato-decompound. Branches arising on all sides, alternate, here and there subsecund, much elongated in sterile plants, usually branching toward apex and the whole ramification is in some measure corymbose. In plants bearing cystocarps, branches are not so elongated as in sterile fronds and are similarly branched toward apex in subcorymbose manner; and the whole frond is densely clothed with short, subulate ramuli, which often arise fasciculately. All the sorts of branches are very patent, more or less constricted at base tapering to apex, which is straight, never being forcipated. *Tetraspores* immersed beneath cortex, verticillately around the node of unaltered branches, afterward scattered. *Cystocarps* sessile along the side of ramuli, single or often two seriated longitudinally along the same side of longer ramuli; nucleus, surrounded by 5 or more involucre which are not much longer than nucleus. Articulation subequal as the diameter in the main portion, $\frac{1}{2}$ - $\frac{1}{3}$ shorter in basal portion of frond and in ramuli;

node neither constricted nor prominent. The cortical cells consist of two layers; the inner, of larger roundish cells, while the outer, of a few layers of smaller cells. *Color* blood-red or purplish red. *Substance* rather thick, soft cartilaginous and tough.

Hab.: On the frond of several algae growing between tide-marks; Provs. Shima, Totomi, Izumo, Noto, Otaru.

PL. CXXIV, fig. 14-22. Fig. 14: smaller form of tetrasporic frond of *Ceramium japonicum* Okam., $\frac{1}{1}$.—Fig. 15: cystocarpic frond, $\frac{1}{1}$.—Fig. 16: portion of the cross-section of frond; c , central cell, $\frac{8.5}{1}$.—Fig. 17: surface-view of a tetrasporic ramulus, $\frac{1.2}{1}$.—Fig. 18: longitudinal section of a tetrasporic ramulus, $\frac{2.2}{1}$.—Fig. 19: portion of the cross-section of a tetrasporic ramulus; c , central cell, $\frac{2.20}{1}$.—Fig. 20: tetrasporangia, $\frac{2.20}{1}$.—Fig. 21: ramuli bearing cystocarps, $\frac{7}{1}$.—Fig. 22: cystocarps, $\frac{1.9}{1}$.

Ceramium japonicum Okam.*

はねいぎす。岡村稱。

第 CXXIV 圖版, 14-22 圖.

根ハ纖維狀,單管ニシテ分岐シ,其末端開展シテ小サキ圓錐狀ノ盤ヲナス。體ハ他ノ稍大ナル海藻上ニ附着シ,叢生シ,直立シ,圓柱狀,全部皮層細胞ヲ以テ蔽ハレ,基部細クシテ根ヲ出シ,實ナキ體ハ6-11 cmノ長サヲ有シ,實アルモノハ2.5-5 cmナリ。枝ハ多少不規則ニシテ,各方面ニ出デ廣開シ,複羽狀ヲナシ,互生シ,其處此處ニ偏在シ,實ナキ體ノモノハ長ク,通常體

* Ceramium (いぎす屬)ノ性質ハ日本海藻圖說,第十七圖版ノ條下ニアリ。

ノ上部ノ方ニ多ク枝ヲ出シ、爲ニ幾分繖房狀ヲナス。囊果アル體ニテハ枝ハ實ナキモノ、如ク長カラザレドモ體ノ上部ノ方ニ多ク枝ヲ分チテ繖房狀ヲナスコトハ同様ナリ；而シテ枝ハ細ク尖レル短キ小枝ヲ以テ密ニ蔽ハレ、小枝ハ往々束狀ニ出ルコトアリ。各部ノ枝ハ廣開シ、基部多少クビレ、先端ノ方ニ細リ、枝端ハ直立シ決シテ鈎狀ニ屈曲セズ。四分胞子囊ハ皮層下ニ埋在シ、別段他ノ枝ト異ナラザル枝ノ節部ノ周圍ニ生ジ、後散在ス。囊果ハ小枝ノ側部ニ無柄ニシテ附着シ、一個若クハ二個稍長キ小枝ノ同一ノ側ニ列ス；仁ハ五條乃至數條ノ苞枝ヲ以テ圍マレ、苞枝ハ仁ノ高サヨリ餘リ長カラズ。體ノ關節ノ長サハ主枝ニ在リテハ其直徑ト稍同ジク、體ノ下部及小枝ニテハ直徑ノ $\frac{1}{2}$ 乃至 $\frac{1}{3}$ ナリ；節ハクビレズ又隆起セズ。皮層ハ二層ヨリ成リ；内皮細胞ハ稍大ナル圓形細胞ヨリ成リ、外皮ハ小ナル細胞ノ數層ヨリ成ル。質ハ稍軟骨質ニシテ柔ク、肉稍厚ク強靱ナリ。色ハ血紅色又ハ紫紅色ナリ。

產地：潮線間ニ於ル種々ノ海藻上ニ在リ。

第 CXXIV 圖版, 14-22 圖. 14: はねいぎす, *Ceramium japonicum* Okam. ノ四分胞子ヲ有スル體ノ小ナルモノ, $\frac{1}{1}$.—15: 囊果ヲ有スル體, $\frac{1}{1}$.—16: 體ノ横斷面ノ一部; c , 中軸細胞; $\frac{8.5}{1}$.—17: 四分胞子ヲ有スル小枝ノ縱斷面, $\frac{12}{1}$.—18: 四分胞子ヲ有スル小枝ノ縱斷面, $\frac{22}{1}$.—19: 四分胞子ヲ有スル枝ノ横斷面; c , 中軸細胞, $\frac{220}{1}$.—20: 四分胞子囊, $\frac{220}{1}$.—21: 囊果ヲ有スル小枝, $\frac{7}{1}$.—22: 囊果, $\frac{19}{1}$.

Caulerpa anceps Harvey.

Nom. Jap.: *Hera-iwazuta*.

PL. CXXV, Fig. 1-8.

Caulerpa anceps Harv. *List of Friendly Isl. Alg.* No. 67; J. Ag. Till Alg. Syst. I. p. 9; Weber v. Bos. Monogr. des Caul. p. 281, pl. 22, f. 6-10.; Okam. Contr. to the Knowl. of the Mar. Alg. of Jap. III. (Bot. Mag. Tokyo Vol. XIII, No. 145) p. 41, Pl I, f. 15-17; Yendo On Caul. anceps (Bot. Mag. Tokyo Vol. XVII,) p. 153 (with figs.)—*C. brachypus* Harv. Char. of new Alg. fr. Jap. (Proc. Am. Ac. Vol. IV) p. 332; J. Ag. Till Alg. Syst. I. p. 11; Weber v. Bos. Caul. d. Monogr. p. 280, pl. 22, f. 2.

Stipulus thick, cylindrical, smooth, naked, repenting and branching. *Fronds* solitary or geminate, flat, broadly linear, strap-shaped, elliptical, ligulate, cuneate, spatulate, etc, obtuse or subtruncate at apex, more or less tapering or roundish at base and furnished with orange-shaped or club-shaped pedicels which are sometimes almost wanting, quite entire or unevenly serrated at margin, simple or irregularly branching and on surfaces and margins furnished with proliferated fronds, whose bases are also often bullated. Frond varies from 2 to 7 cm. in length and from 5 to 8 mm. in breadth and the thickness from 0.2 to 0.4 mm. according to seasons (after Yendo). The cell wall at the spinous region is much thicker than sinus. *Colour* beautiful herbaceous green. *Substance* rather stiff when fresh, soon becoming soft, membranaceous; plant imperfectly adheres to paper in drying.

Hab.: On rocks near low water-mark. Provs. Hizen and





9 5 1 4 2 6 3 8 10 7
Caulerpa anceps Harvey へらいはづた Fig. 1-8.
Caulerpa subterrata Okam. きざみづた Fig. 9-10.

Higo, Prov. Iyo, Prov. Boshyu, Prov. Sagami. Tanegashima (*C. brachypus*).

PL. CXXV, Fig. 1-8. Fig. 1: frond of *Caulerpa anceps* Harv. $\frac{1}{1}$.—Fig. 2-3: branching and proliferating frond; $\frac{1}{1}$.—Fig. 4: bullated pedicels, $\frac{3}{1}$.—Fig. 5: ramenta with serrature, $\frac{1}{1}$.—Fig. 6: margin of a ramenta magnified, $\frac{5}{1}$.—Fig. 7: marginal tooth marked α in Fig. 6, magnified, $\frac{220}{1}$.—Fig. 8: strands of cell membrane, $\frac{220}{1}$.

Caulerpa Lamouroux 1809.

いわづた 属.

CAULERPACEÆ. いわづた科.

體ハ匍匐莖ヲ有シ其下面ヨリハ分岐セル絲狀根ヲ出シ、其上面ヨリハ單條又ハ分岐セル枝ヲ出シ此枝種々ノ形狀ヲナセル葉ヲ有スルコトアリ有セザルコトアリ;但シ葉ハ決シテ網目狀ノ孔ヲ存スルコトナシ。生殖ハ體ノ一部ノ分離スルコトニ依テ成ル。

熱帶及亞熱帶ノ海ニ産シ70餘種アリ、本邦亦十數種ヲ産ス、殊ニ暖流區域ニ多ク犬吠岬以南ハ其種類ニ富メドモ以北ハ僅ニ一種ニシテ日本海ニハ其類多カラズ。——屬ノ名ハ caulos (莖) ト erpo (匍匐ス) トヨリ成ル。

Caulerpa anceps Harvey.

へらいわづた 岡村 稱

第 CXXV 圖版, 1-8 圖.

匍枝ハ太ク、圓柱狀、平滑ニシテ毛茸ナク、匍匐シ、分枝ス。

體ハ單獨又ハ二個ヅ、相向ヒ合ヒテ立チ、扁平、廣キ線狀、砥革狀、舌狀、楔形、筵狀、楕圓狀等種々ナリ、頂端鈍圓又ハ稍截形ヲナシ、基部多少細ク又ハ圓ク、橙ノ如キ又ハ無花果ノ實ノ如キ形セル膨レタル柄ヲ有ス、中ニハ全ク之ヲ欠クモノアリ、緣邊全緣又ハ不平等ニ鋸齒ヲ存シ、單條又ハ不規則ニ分岐シ、體ノ表面並ニ緣邊ヨリ枝ヲ副出シ、其基部亦往々膨レタル柄ヲ有ス。體ノ長サハ 2-7 cm ニシテ幅 5-8 mm., 厚サ 0.2-0.4 mm. アリ、夏ト冬トニ於テ厚薄アリト云フ (遠藤氏)。鋸齒ノ刺端ノ細胞膜ハ其灣形部ノモノヨリ厚シ。色ハ鮮綠色。質ハ新鮮ノ時ハ稍硬ケレドモ、後軟クナリ膜質ニシテ、乾燥スルトキハ紙ニ附着スルコト充分ナラズ。

產地：低潮線近キ岩石ニ生ジ、往々砂ヲ以テ埋メラル。牛深、二江 (肥後)、野母、平戸 (肥前)、對馬、伊豫狩江村、相州三崎、房州高ノ島、沖ノ島、洲ノ崎及白濱。種子ケ島 (*C. brachypus* Harv.).

分布：フレンドリー島。

第 CXXV 圖版, 1-8 圖. 1: へらいわづた, *Caulerpa anceps* Harv. ノ體, $\frac{1}{1}$ —2-3: 體ノ分岐スルモノ、及副出スルモノ, $\frac{1}{1}$ —4: 膨レタル柄ヲ示ス, $\frac{3}{1}$ —5: 鋸齒アル體ノ一片, $\frac{1}{1}$ —6: 體ノ緣邊廓大, $\frac{5}{1}$ —7: 6圖ノaヲ廓大シタルモノ, $\frac{220}{1}$, —8: 細胞膜壁ヨリ起リテ體內ヲ縱横ニ走ル絲, $\frac{220}{1}$.

Caulerpa subserrata Okam.

Nom. Jap.: *Kizami-zuta*.

PL. CXXV, Fig. 9-10.

Caulerpa subserrata Okam. On the Alg. fr. Ogasawara-jima (Bonin-Isl.) (Bot. Mag. Tokyo Vol XI), tab. 1, f. 1-2; Weber v. Bosse Monogr. d. Caulerpes p. 283; Id. Liste des Alg. du Siboga p. 99.

Frond erect, rising from repenting, slender, glabrous, cylindrical, branching surculus, very shortly stipitated, often geminate, flat, linear or elliptico-oblong, 1-2.5 cm. long, 3-4 mm. broad, truncato-obtuse at apex, oval or obtuse at base, simple or proliferated from surfaces, serrato-pinnatilobed along both margins, with lobes subalternately much approximated, very short, patent, and a little curved upward, deltoideo-linear, younger ones apiculated, becoming obtuse more afterward, subequal to half the breadth of the rachis.

Hab.: Ogasawara-jima.

PL. CXXV, Fig. 9-10. Fig. 9 frond of *Caulerpa subserrata* Okam. in nat. size.—Fig. 10: the same magd, $\frac{35}{1}$.

Caulerpa subserrata Okam.

きざみづた 岡村 稱

第 CXXV 圖版, 9-10 圖

體ハ直立シ、匍枝ハ平滑ニシテ毛茸ナク、細キ圓柱狀、分岐

シ、短キ莖ヲ有シ、往々二個向合ヒテ立テ、扁平、線狀又ハ楕圓狀—長楕圓形、1-2.5 cm 長ク、幅 3-4 mm アリ、頂端截形—鈍圓、基部卵形又ハ鈍圓、單條又ハ表面ヨリ副出シ、兩緣鋸齒樣ナル羽狀裂片ヲ存シ、裂片ハ稍互生シ、相接近シ、極メテ短ク、廣開シ、少シク上方ニ屈曲シ、三角樣線狀ニシテ、幼者ハ其頂端尖レドモ、後鈍頭トナル、其長サハ體ノ中央部ノ幅ノ稍半分ニ同ジ。

產地： 小笠原島。

分布： Karkaralong 島。

第 CXXV 圖版、9-10 圖。 9： きざみづた、*Caulerpa subserrata* Okam., ノ體, $\frac{1}{1}$ 。—10： 同上ノ一部, $\frac{3.5}{1}$ 。





Gelidium pacificum nov. sp.

おほぶき



K. Okam. del.

Polysiphonia Morrowii Harv. もろいこぐさ Fig. 1-8.
Gelidium pacificum nov. sp. おほぶさ Fig. 9-11.

Gelidium pacificum Okam. n. sp.

Nom. Jap.: *Ō-busa*.

PL. CXXXVI—CXXXVII, Fig. 9-11.

Diagn.: *Fronde*s large, linear, ancipito-compressed, 3-4 times pinnately branched in an alternate or opposite manner. Branches very patent, flexuose, longer and shorter mixed, shorter ones appearing like ramuli which are loaded with simple or divided ramelli and longer ones again pinnated in the similar manner as other branches. *Cystocarps* swollen beneath the apices of ramelli, either terminated with simple or branched, pointed or expanded apices. *Tetrasporangia* formed in sori in roundish or more or less expanded ramelli.

Hab.: On rocks in the depth of 3-11 fathoms. Miyake Isl., Kōdzu Isl. (3 fath.); Amatsura and Nemoto (8-11 fath., Prov. Boshyu); Shirahama and Inatori (Prov. Idzu); Prov. Sagami. Fruits: summer.

Descrip.: *Fronde*s high, often 30-40 cm, usually 15-20 cm long, caespitose, linear, ancipito-compressed, rising from fibrous roots, much branching a little above the root in 3-4 times pinnate manner. Branches of every order are alternate or opposite, very patent, longer and shorter mixed; shorter ones appear as if ramuli which are furnished with simple or branched ramelli and longer ones are again pinnated in the similar manner as other branches. Larger branches are slightly flexuose and terminal portions are somewhat naked. Fruits of both kinds formed in ramelli which are often aggregated. *Tetrasporic sori* are produced in roundish, ovate or oblong, more or less expanded ramelli. *Cystocarps* are

swollen beneath the apices of ramelli, either terminated with a simple, or branched, pointed or expanded apical portion; often two cystocarps are formed in a discontinuous longitudinal row in one ramellus. *Colour* shining purplish red. *Substance* cartilaginous and the plant does not adhere to paper in drying.

The alga is perennial and during one year it makes the growth of 18–21 cm. Of duration of the life of this alga we know nothing.

Of the anatomical structure, the frond consists of three layers, cortical, infra-cortical and medullary (Pl. CXXVII, Fig. 9, *a*, *b*, *c*). The hyaline filaments which are characteristic for the plants of this genus are very dense in the infra-cortical layer and more loose in the medullary. The structure is just same as that of *Gelidium amansii* Lam.

Affinities: The present plant has been taken by early authors for *Gelidium cartilagineum* Grev. (e.g. Harv. in Gray's List of Jap. Plant no. 13, collected at Shimoda) from the resemblance of the flexuose habit of branches, and of cystocarpic and tetrasporic ramelli. But the mode of ramification is very different in two plants. In *Gelidium cartilagineum* longer and shorter branches do not stand mixed, and the pinnate arrangement of branches is more regular than in ours. Moreover the frond of the former is much larger and more stout, and branches are broader and thicker than the present plant; also branches (which are more widely patent as almost horizontal) are a little narrowed at their bases.

Gelidium pacificum, on the other hand, is more robust than *G. amansii* Lam. with which it is so closely allied that both plants are often confused, and the both grow in the same locality; but the former prefers the habitat where waves are strong or tidal currents are in a good flow, while the latter is found in rather calm places;

and so, the former is often found in a projected point while the latter in sheltered places. Fronds of the former are much larger than those of the latter and the branches are much broader. Tetrasporic ramelli are more or less expanded and roundish in *G. pacificum*, while in *G. amansii*, linear or linear-oblong. Again, cystocarps of the former are terminated with somewhat expanded apical portions of ramelli and not so long and slender as in the latter. Also in the plant in question both tetrasporic and cystocarpic ramelli are more or less aggregated, while in the plant taken in comparison they are loosely arranged.

PL. CXXVI. Fig. 1: tetrasporic frond of *Gelidium pacificum* Okam. n. sp. in nat. size.—Fig. 2: portion of branch bearing cystocarps, $\frac{1}{1}$.—Fig. 3: cystocarps. $\frac{12}{1}$.

PL. CXXVII, Fig. 9–11. Fig. 9: cross-section of the middle portion of a main branch; *a*, cortical layer; *b*, infra-cortical, full of hyaline filaments; *c*, medullary layer, $\frac{22}{1}$.—Fig. 10: portion of fig. 9 magnified; characters same as fig. 9, $\frac{290}{1}$.—Fig. 11: tetrasporic ramelli, $\frac{12}{1}$.

***Gelidium pacificum* Okam. 新種.¹⁾**

おほぶさ (又おとこぐさ).

第 CXXVI 圖版; 第 CXXVII 圖版, 9–11 圖.

性質: 體ハ大ニシテ線狀, 扁壓, 兩縁ニ薄ク, 3-4 回羽狀ニ分岐シ, 互生又ハ對生ス. 枝ハ甚ダ廣ク開キ, 輕ク雁木狀ニ屈

1) てんぐさ屬 (*Gelidium*) ノ性質ハ日本海藻圖說第一卷第一冊第五頁ニアリ.

折シ、長短混在ス、其短小ナルモノハ恰モ小枝ノ如キ觀ヲナシ、更ニ單條又ハ分岐セル最末小枝ヲ存ス、其長大ナルモノハ復他ト同様ニ羽狀ヲナス。 囊果ハ最末小枝ノ頂端下ニ膨レ、其上部ハ單條又ハ分岐シテ單ニ尖リ若クハ開張ス。 四分胞子囊ハ多少開張セル圓キ最末小枝ニ群生ス。

產地： 3-II 尋ノ岩石ニ生ズ。 三宅島、神津島(3尋)；安房天面及根本(8-II 尋)；伊豆白濱、稻取；相模江ノ島。 果實：一夏季。

體ハ長大、往々 30-40 cm ニ達スレトモ、通常 15-20 cm. アリ、叢生シ、線狀扁壓ニシテ兩縁ニ薄ク、纖維狀根ヲ以テ立チ、根ヨリ少距離ノ所ニテ分岐シ、3-4 回繁ク羽狀ヲナス。 各部ノ枝ハ互生又ハ對生シテ甚シク廣開シ長短交々相混ズ；其短小ナルモノハ恰モ小枝ノ如キ觀ヲ呈シ、單條又ハ分岐セル最末小枝ヲ存ス；其長大ナルモノハ復他ノ枝ト同様ニ羽狀ヲナス。 長大ナル枝ハ輕ク雁木狀ニ屈折シ其頂部ハ稍裸出シテ小枝ヲ存スルコト少ナシ。 果實ハ最末小枝ニ形成セラレ往々密聚ス。 四分胞子群ハ、圓形、卵形又ハ長橢圓形ニシテ多少開展セル最末小枝ニ生ズ。 囊果ハ最末小枝ノ頂端下ニ膨レ其上部ハ單條又ハ分岐シテ單ニ尖リ若クハ開張ス；往々二個ノ囊果相離レテ同一小枝ニ一列ニ形成セラル、コトアリ。 色ハ光澤アル暗紅色ナリ。 質ハ軟骨質ニシテ乾燥スルトキハ紙ニ附着セズ。

本植物ハ多年生ニシテ一年間ニ 6-7 寸伸長ス。 其壽命ニ就テハ今詳ナラズ。 此植物ハ諸種ノてんぐさ中最モ優等品トシ商家ハあらつち又神津草ト稱ス。

體ノ構造ハ三層ヨリ成ル、即チ皮層、皮下層及髓層トス(第 CXXVII 圖版、9 圖 a, b, c)。 本屬ノ植物ニ於テ一般ニ見ル所ノ透明ナル絲狀細胞ハ殊ニ皮下層ニ密集シ髓層ニハ稍粗ナリ。 此

構造ハ普通ノてんぐさ (*Gelidium amansii*, 第百六圖版) ト全ク同一ナリ。

類縁：本植物ハ枝ノ屈折ノ模様、囊果及四分胞子ヲ有スル小枝ノ類似スル點ヨリ從來 *Gelidium cartilagineum* Grev. ト誤認セラレ、(例ヘバ Harvey ガ下田ニテ某ノ採集セルモノヲ Gray's List of Jap. Plant No. 13 ニ其種名ヲ以テ記シタルガ如キ是ナリ)、余モ亦其種名ヲ以テ植物學雜誌其他ニ報告シタリ；然レドモ分枝法ハ兩者ニ於テ甚異ナレリ。 *Gelid. cartilagineum* ニ在リテハ枝ハ長短混在スルコトナク、羽狀配列ハ本植物ヨリモ遙ニ正シキモノアリ。且、前者ノ體ハ後者ヨリモ大ニシテ堅牢ニ、枝ハ幅濶ク且肉厚シ、而シテ枝ハ一層廣開シテ殆ド水平ナルガ如ク其基部少シク細シ。

更ニ他ノ方面ニ於テ、本植物ハ之ト最モ近キ類縁ヲ有シテ爲ニ往々兩者相同一視セラル、コトアル *G. amansii* Lam. (普通ノてんぐさ又めぐさ) ト比スルニ遙ニ強大ニシテ、兩者トモ同一地方ニ産ス；然レドモ前者ハ波浪ノ強キ又ハ潮流ノ急激ナル所ニ産シ、後者ハ寧ロ靜穩ナル所ヲ好ム；故ニ前者ハ往々岬角ノ如キ突出セル所ニ産シ、後者ハ灣形ノ所ニ在リ。前者ノ體ハ後者ノモノヨリモ大ニシテ枝ハ幅濶シ。四分胞子ヲ有スル小枝ハ多少開展シテ圓ク、普通ノてんぐさノ線狀又ハ線狀一長橢圓形ナルニ反ス。又、本植物ノ囊果ノ頂部ハ稍開展シ、普通ノてんぐさノモノ、如ク細ク且長カラズ、而シテ其配列ヲ見ルニ前者ノ小枝ハ多少密集スレドモ後者ノモノハ粗ニシテ密ナラズ。

第 CXXVI 圖版. 1: おほぶさ, *Gelidium pacificum*, 新種, ノ四分胞子囊ヲ有スル體, $\frac{1}{1}$.—2: 囊果ヲ有スル枝ノ一部, $\frac{1}{1}$.—3: 囊果, $\frac{12}{1}$.

第 CXXVII 圖版, 9-11 圖. 9: 主枝ノ中央部ノ横斷面; a, 皮

部; *b*, 皮下層ニシテ透明ナル絲狀細胞ノ密集スル部分; *c*, 髓部,
 $\frac{2^2}{1}$.—10: 第9圖ノ一部ヲ廓大シタルモノ; 指字ハ9圖ニ同ジ, $\frac{3^2}{1}$.
—11: 四分胞子ヲ有スル小枝, $\frac{1^2}{1}$.

Polysiphonia Morrowii Harv.

Nom. Jap.: *Moro-itogusa*

PL. CXXVII, Fig. 1-8.

Polysiphonia Morrowii Harv. in Gray's List of Jap. Plant. no. 5; Kütz. Tav. Phyc. Vol. XIV, p. 17, t. 47, f. *a-b*; *c*? (with tetraspores); De Toni Syll. Alg. V, p. 960; 岡村, 藻類名彙 p. 59.

Fronds densely tufted, elongated, 10–25 cm. high, setaceous, about 0.3 mm. thick, alternately decompose pinnate. Basal portions of the primary branches are naked or provided with a few hamatous simple or divided ramuli which are also scatteredly found along the main segments. Pinnæ alternate and linear in outline, patent, densely pinnulated on all sides. Pinnules or ramuli short, erect or erecto-patent, subulate, simple below, multifid above, and often recurved. Articulations 4-siphonous and thoroughly ecorticated; length of articulations of the main segments 6–8 times as the diameter, that of pinnæ subequal to or a little longer, and that of pinnules that is ramuli, as half as the diameter. *Tetraspores* found in fusiform stichidial ramelli densely arising in clusters in the axils of ramuli, 3–4 arranged in a longitudinal row. *Cystocarps* borne on the upper ramuli, urceolate with a wide ostiole, slightly crenulated at the margin and almost sessile. *Colour* brown, becoming almost black in drying. Frond does not adhere to paper in drying.

Hab.: Riishiri (Faurie, Herb. Mus. Paris no. 9732, leg. Hariot), Mashike, Zenibaco, Fukuyama, Hakodate (Hokkaido); Naoyetsu, Kujiranami, Aomigawa (Prov. Echigo). Fruits:—late spring to summer.

A very distinct and handsome species closely allied to *P. urceolata* Harv., as Harvey remarks in Harv. l.c, but the ramification is very different. I have studied a specimen of this species from Prof. Farlow's Herbarium kept in the herbarium of Tokyo Imp. Univ. which is found with stichidia forming clusters in the axils of ramuli as it is natural for this species. Kützing's illustration which shows tetraspores borne in usual ramuli instead of in the ramelli standing in the axils of ramuli is at variance with our observations.

PL. CXXVII, Fig. 1-8. Fig. 1: portion of the frond of *Polysiphonia Morrowii* Harv., in nat size.—Fig. 2: branch bearing stichidia, $\frac{31}{1}$.—Fig. 3: cross-section of branch, magd.—Fig. 4: ramulus or pinnulus, $\frac{54}{1}$.—Fig. 5: stichidial ramelli arising in a cluster from the axil of a ramulus, $\frac{54}{1}$.—Fig. 6: two stichidia in lateral and ventral views, $\frac{91}{1}$.—Fig. 7: cystocarpic branch, $\frac{42}{1}$.—Fig. 8: cystocarp, $\frac{54}{1}$.

Polysiphonia Greville. 1824.

いとぐさ属.

RHODOMELACEAE. ふちまつも科.

體ハ柔軟細胞又ハ絲狀細胞ト柔軟細胞トヨリ成リ,直立シ或ハ始メ傾臥シ後直立シ,圓柱狀,稀ニ稍扁平,羽狀又ハ叉狀ニ分岐ス;枝ハ大トナク小トナク全部同一ノ性質ニシテ,頂端成

長ニ依リ夫々ノモノトナリテ發生ス。枝ハ概テ長ク伸ビテ細ク、柔軟ニシテ弱ク又ハ硬毛狀ニシテ粗硬、全部又ハ少ナクトモ上部ハ明ニ横ニ關節シ、成長點附近ニ於テハ概テ分岐セル早落性ノ毛狀葉ヲ存ス；此毛即チ毛狀葉ハ早ク既ニ形成セラレズトモ、頂端成長ノ停止スル前若クハ少ナクトモ生殖器ノ初期ニ當リテ形成セラル、充分ニ形成セラレタル多管軸ハ四個又ハ六個以上ノ周心管ヲ有シ全部皮層細胞ナク又ハ早晚皮層ヲ以テ蔽ハル、其皮層細胞ハ多少絲狀ニシテ短キ細長キ根樣絲ヨリ成リ、其根樣絲ハ概テ周心細胞ノ下端ヨリ生ズ；時トシテハ周心細胞ト中軸トノ間ニ於テ細クシテ下方ニ伸長スル後生の根樣絲ヲ以テ中軸ヲ圍繞ス。頂端成長ハ單基的ニシテ長ク挺出シ、時トシテハ稍斜ニ關節セル頂細胞ヨリ成ル；毛狀葉ハ螺旋狀ニ交互シテ（往々 $\frac{1}{4}$ ノ間隔ヲ有スル葉序ニテ）總テノ關節ヨリ出デ、規則正シク又ハ不規則ニ交互シテ多數ノ關節ニ又ハ只一個ノ關節ニ存スルコトアリ；而シテ時ニ全部早落性ノ毛狀葉即チ毛トナリ又時ニ所々ノモノノミ毛ト成ル。始ノ枝（即チ成長點ヨリ生ゼラル、モノ）ハ毛狀葉ノ基部細胞ヨリ生ジテ其腋ニ出デ、或ハ側面ニ伸ビ或ハ毛狀葉ハ其マ、伸長セズシテ直ニ枝トナルコトアリ。後生ノ枝ハ内生（成長點附近ヨリ生ズルニアラズシテ既成ノ部分ヨリ枝ヲ出ストキハ内部ヨリ生スルコトヲ云フ）ニシテ多數ノ種類ニハ規則正シク存ス。——四分孢子囊ハ散在シ或ハ多數集リテ特殊ノ形態ヲ有セザル枝ノ上部ニ形成セラレ、其部ハ僅ニ膨ル、而シテ一關節ニ一個（極メテ稀ニハ相對シテ二個）ヲ生ジ、概テ螺旋狀ニ列ナリ多少斷續シ、時トシテハ又一直線ニ縦列ス；外部ハ2乃至3個ノ同長ナル蓋細胞ヲ以テ永ク蔽ハレ、成熟スルニ到ル迄可ナリ膨大ス。生殖器ハ伸長ヲ繼續セル若クハ伸長ヲ限ラレタル枝ノ頂端ニ毛狀葉ヲ存スルモノニ

於テ各一個ノ毛狀葉ヨリ形成セラレテ多數ニ存ス、但精子器ハ專ラ毛狀葉ノ小枝ニ形成セラル、精子器ハ長キ穗狀ニシテ柄ヲ有シ、精子細胞ノ密集スル小枝ヨリ成ル、胎原列ハ極テ簡單ニ成レル毛狀葉ノ第二ノ關節ヨリ起リ、多管軸ノ短キ柄ヲ有ス、囊果ハ卵形又ハ壺狀ニシテ短キ柄ヲ有シ、小枝ニ附着ス。

此屬ハ各地ノ海ニ産シテ極メテ多數ノ種類ヲ存シ、今日迄報告セラレタルモノ150種以上ニ達ス；然レドモ精確ニ研究セラレタルモノ多カラズシテ、此屬ノ種類ホド誤多キモノハアラズ、又多數ノ種類ハ其形狀極メテ變化多シ、從來此屬ニ含マレタル種類ニシテ研究ノ結果別屬ヲ立ルニ到リタルモノ11ノ多キニ達セリ。——屬ノ名ハ Poly (多) ト siphon (管) トヨリ成ル即チ體ノ構造ニ則ルナリ。

Polysiphonia Morrowii Harv.

もろいとぐさ 岡村稱。

第 CXXVII 圖版, 1-8 圖。

體ハ密ニ叢生シ、長サ 10-25 cm、剛毛ノ如クシテ約 0.3 mm. 太ク、複羽狀ニ互生ス、第一位ノ枝ノ下部ハ裸出シ(小枝ナキヲ云フ)或ハ單條又ハ分岐シタル鈎狀ニ反曲セル僅ノ小枝ヲ存ス、斯ノ如キ小枝ハ又主枝ノ處々ニ散在ス、羽枝ハ互生シ、輪廓線狀ニシテ廣開シ、各方面ニハ密ニ小羽枝ヲ存ス、小羽枝即チ小枝ハ短ク、直立若クハ直立—廣開シ、尖銳、下部單條ニシテ上方ニハ分裂シ往々反曲ス、關節ハ4個ノ周心管ヨリ成リ、全體皮層細胞ナシ；主枝ノ關節ノ長サハ其部ノ直徑ノ 6-8 倍長ク、羽枝ノモノハ之ト略同長若クハ僅ニ長ク小羽枝即チ小枝ノモノハ其半ニ等シ、四分孢子囊ハ小枝ノ腋ニ密ニ叢

生セル紡錘狀ノ「スチキジア*」狀ノ最末小枝ニ形成セラレ、一列ニ3-4個ヲ藏ス。 囊果ハ上部ノ小枝ニ存シ壺狀ニシテ廣キ口徑ノ果孔ヲ有シ、其縁邊ハ少シク波狀ニウネリ、殆ド無柄ナリ。色ハ褐色ニシテ乾燥スルトキハ殆ド黒色トナル。體ハ乾燥スルトキハ紙ニ附着セズ。

產地： 利尻 (Faurie ノ採集ニ係ル Paris ノ博物館ノ標品 No. 9732 ニシテ Hariot ヨリ余ニ鑑査ヲ請ヘルモノ)、増毛、錢函、福山、函館、鯨波、青海川、直江津(越後)。 果實：一晚春ヨリ夏季。

Harvey 氏カ論ゼル如ク確ニ他ト區別セラレタル種ニシテ *P. urceolata* Harv. ニ近縁ヲ有スル美シキ植物ナリ、然レドモ分枝法ハ兩者異ナレリ、予ハ東京理科大学植物學室所藏ノ Farlow 氏ノ標品ヲ檢シタルニ此種ノ性質タル如ク小枝ノ腋ヨリ叢生セル「スチキジア」狀ノ小枝ニ四分胞子ヲ有スルコトヲ知レリ。然ルニ Kützing 氏ハ其圖說(上記)ニ普通ノ小枝(即チ小枝ノ腋ヨリ叢生スルモノニアラザル小枝)ニ四分胞子ヲ有スルモノヲ圖示セリ；此ハ予輩ノ視ル所ト同ジカラズ、或ハ氏ノ誤認カ否ラザレバ他ノ之ニ類スルモノヲ混同シタルモノナルベシ。

第 CXXVII 圖版 1-8 圖。 1: もろいとぐさ, *Polysiphonia Morrowii* Harv. ノ體ノ一部, $\frac{1}{1}$ 。—2: 「スチキジア」狀小枝ヲ有スル枝ノ一部, $\frac{31}{1}$ 。—3: 枝ノ横斷面, 廓大。—4: 小枝即チ小羽枝, $\frac{54}{1}$ 。—5: 小枝ノ腋ヨリ叢生セル「スチキジア」狀ノ最末小枝, $\frac{54}{1}$ 。—6: 二個ノ「スチキジア」ノ側面及腹面, $\frac{91}{1}$ 。—7: 囊果ヲ有スル枝, $\frac{42}{1}$ 。—8: 囊果, $\frac{54}{1}$ 。

* スチキジア, *stichidia*, トハ四分胞子ヲ有スル枝ノ特ニ他ノ枝ト形狀ヲ異ニセルヲ云フ。

Turbinaria fusiformis (Harv.) Yendo.

Nom. Jap.: *Hiziki*.

PL. CXXVIII—CXXIX, Fig. 5-12.

Turbinaria(?) *fusiformis* Yendo Prelim. List of Fuc. Jap. p. 153; Id. The Fucaceae of Japan p. 44, Pl. IV, Fig. 1-7.—*Cystophyllum fusiforme* Harv. Char. of New Alg. p. 328; De Toni Syll. Alg. III, p. 159; Id. Phyc. Jap. Nov. p. 47; Okam. Alg. Exsic. Jap. No. 36; 岡村, 藻類名彙, p. 141.

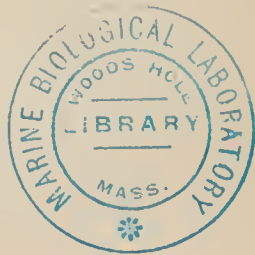
f. clavigera (Harv.) Yendo l. c. PL. CXXVIII, Fig. 2-3.
Cystophyllum fusiforme β *clavigerum* Harv. l. c.

Root a small holdfast with robust, cylindrical rhizines. *Stem* erect, cylindrical, branching in 2-3 times pinnate and alternate manner. A few radical leaves or "rami," as they are called, are present near the basal portion of the frond. *Leaves* are deciduous and are always observed in very young individuals only. They are compressed, thick and fleshy, of ovate, clavate or linear-spathulate shape, more or less tapering upwards, pointed or rounded at apex, coarsely dentate at the upper margin and provided with a short cylindrical petiole and cryptostomata. The *rami*, as they are called, very much vary in shape. In some they are short and clavate with the apical portion inflated into a pyriform vesicle. In others they are several inches long, solid, cylindrical, with equal thickness throughout the whole length, except towards both ends, where they become somewhat slender. Often some "rami" become clavate, complanated above and toothed, thus assuming the appearance like leaves; such forms seem to me to be more common in the southern plants. *Vesicles* are either mucronated or tapering upwards or fusi-

form, and sometimes they are furnished with leaf-like wings as in PL. CXXVIII, Fig. 3. According to Mr. Yendo the plants from colder seas are rich in the clavate "rami" while in those from warmer regions the "rami" on the principal members are mostly filiform. The former coincide with the definitions of var. *clavigerum* Harv. But this character is invalid as Mr. Yendo remarks and many intermediate forms between both extremes are met with. Branches when young are stunted standing in the axils of the "rami" and are beset with several ramuli in a spiral arrangement, thus assuming the appearance of subfasciculate bunches at the axils; they gradually develop into branches and fulcrant "rami" are dropped off. This prolongation is restricted to the primary branches only and those of the next order do not elongate.—*Receptacles* (diaecious) are oblong or clavato-cylindrical with rounded apices, clustered in the axils of the "rami." *Colour* olive brown. *Substance* succulent and the plant imperfectly adheres to paper in drying.

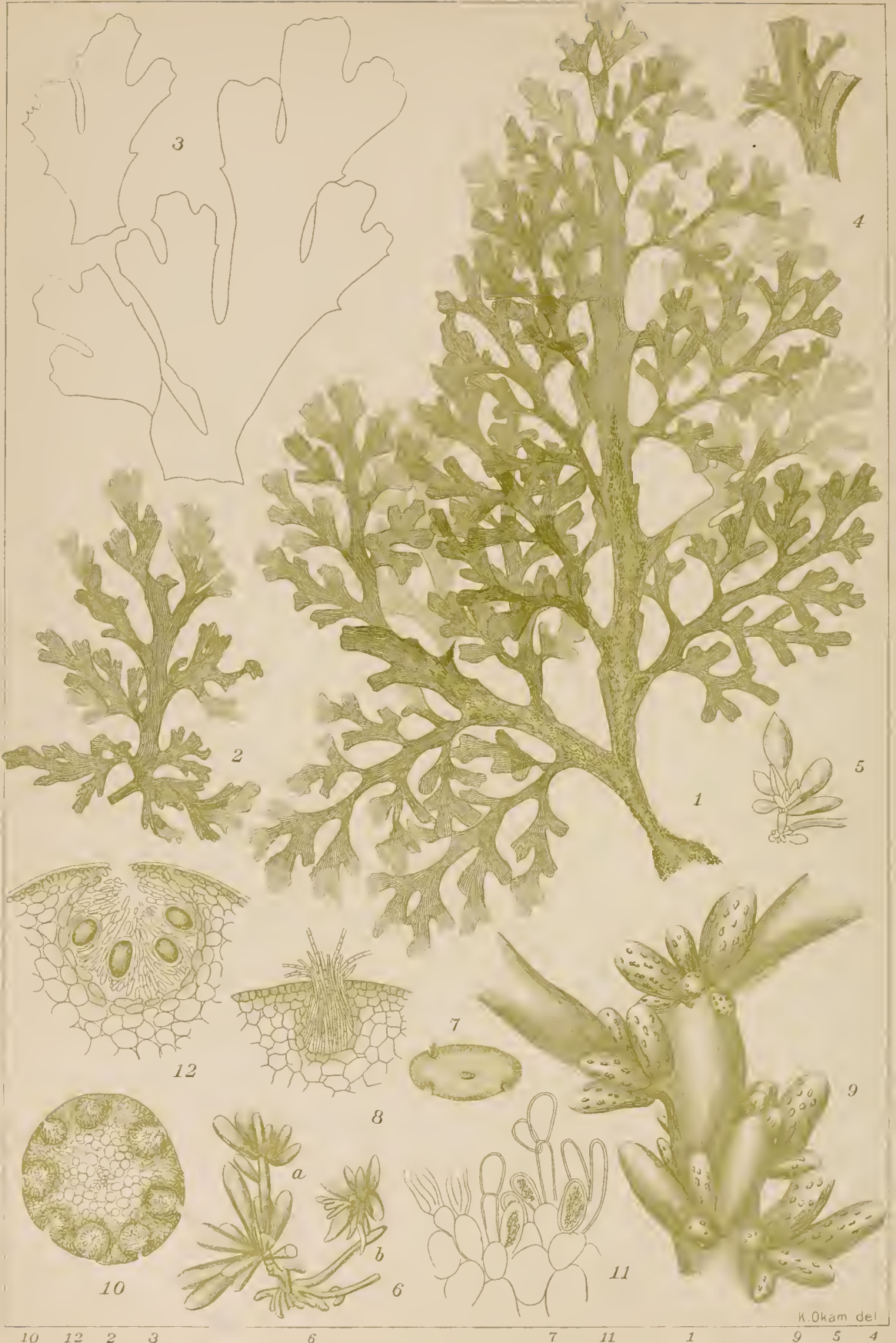
Frond when fully grown often attains the length of one meter, but usually about 30 cm. long with the diameter of 3-4 mm. in the thicker portion. Branches are mostly short, but some are 5-10 cm. long. The plant is diaecious and perennial, but the original or primary frond seems to wither yearly and before it dies the plant shoots out short branches like stolon from the basal portion and on that stolon young fronds are developed. In this country the plant is gathered by people as food material and on this account the duration of life is not easy to make clear.

Hab.: gregarious on rocks below high tide; very common along the Pacific coast from Kyushyu to Prov. Rikuchyu; also Tsugaru str.; Toppu, Zenigamezawa, Fukuyama, Hakodate (Prov. Oshima, Herb. Sapparo Agricultural College); eastern and western sides





Turbinaria fusiformis (Harv.) Yendo. ひじき Fig. 1 6.
var. clavigera (Harv.) Yendo. Fig. 2-3.



K. Okam del.

Dictyota dentata Lamour. とげあみぢ Fig. 1-4.
Turbinaria fusiformis (Harv.) Yendo ひじき Fig. 5-12.

of Kyushyu; Iki and Tsushima; less common along the coast of the Japan Sea; Tango, Tajima, eastern coast of Chosen at Chyumon jin and Fusan. Fruits:—late in Spring.

PL. CXXVIII. Fig. 1: young frond of *Turbinaria fusiformis* (Harv.) Yendo bearing filiform “rami,” $\frac{1}{4}$.—Fig. 2: full-grown frond of *f. clavigerum* bearing receptacles (from Katsuura, Prov. Boshyu). The one end marked \times is to be connected with the other end with the same mark, $\frac{1}{4}$.—Fig. 3: *clavigerum*-form from Kagoshima, showing the plant bearing leaves and air-vesicles which are seen with leaf-like wings, $\frac{1}{4}$.—Fig. 4: young leafy frond from Hamajima, Prov. Shima, $\frac{1}{4}$.—Fig. 5: leaf of the same with cross-sections of several parts, $\frac{1}{4}$.—Fig. 6: basal portion of a frond having radical “rami,” $\frac{1}{4}$.

PL. CXXIX, Fig. 5-12. Fig. 5-6: young fronds formed on a stolon; in fig. 5, two young fronds, *a* and *b*, are two frondlets ormed; the lower stolon in the fig. is connected with the original or primary frond, (Fig. 6: Tateyama, Prov. Boshyū; 27, May, 1913), $\frac{1}{4}$.—Fig. 7: cross-section of a “ramus,” $\frac{8}{1}$.—Fig. 8: cryptostomum of Fig. 7, $\frac{54}{1}$.—Fig. 9: receptacles, $\frac{54}{1}$.—Fig. 10: cross-section of a male receptacle, $\frac{42}{1}$.—Fig. 11: antheridia, $\frac{390}{1}$.—Fig. 12: female con ceptacle, $\frac{91}{1}$.

Turbinaria Lamouroux 1825.

らつぱもく属

SARGASSACEAE. ほんだわら科.

體ハ中位ノ大サニシテ纖維狀根ヲ以テ立チ,各方面ニ分岐
ス。枝ハ長條及短條(即チ葉)ニ分ツベク,前者(概ネ少ナシ)ハ



細長ク後者ハ楯狀ヲナシ、縁邊鋸齒ヲ有シ、圓柱狀又ハ三稜アル葉柄ヲ存シ、柄ノ内部膨大シテ氣胞ヲナスコトアリ。特ニ設ケラレタル氣胞ハ之ヲ欠クト雖モ、氣胞ト生殖器托トハ別々ナリ。生殖器托ハ葉腋ニ生ジ、多少房狀ニ分岐シ、圓柱狀乃至棍棒狀、叉狀ノ小枝ヲ有ス、故ニ營養體ノ短條トハ全ク異ナレリ；而シテ雌雄異株若クハ同株、時ニ同一窠ニ兩者ヲ混ズルコトアリ。

7-8 種アリ。專ラ太西洋（西印度及ブラジル）紅海、印度洋並ニ太平洋中央及南部等熱帶若クハ亞熱帶部ニ産ス。本邦亦數種アリ、專ラ薩南琉球等ニ産ス。——屬ノ名ハ turbo（西洋獨樂）ヨリ成ル、即チ葉ノ形狀之ニ類スレバナリ。

Turbinaria fusiformis (Harv.) Yendo.

ひじき

第 CXXVIII—CXXIX 圖版, 5-12 圖。

T. clavigerum (Harv.) Yendo. ふくろひじき

第 CXXVIII 圖版, 2-3 圖。

根ハ小ニシテ細キ圓柱狀ノ纖維根ヨリ成ル。莖ハ直立シ、圓柱狀、2-3 回羽狀ニ互生ス。莖ノ基部ニハ數個ノ根際葉又小枝（通常之ヲ小枝ト呼ブ）アリ。葉ハ早落性ニシテ常ニ甚ダ幼キ體ニノミ見ラル。葉ハ扁圓ニシテ厚ク、多肉、卵形、棍棒狀又ハ線一匏狀ヲナシ、多少上方ニ細クナリ、頂端尖リ又ハ圓シ、而シテ上部ノ縁邊粗キ鋸齒ヲ有シ、短キ圓柱狀ノ葉柄ヲ存シ、葉ノ表面ニ毛窠ヲ存ス。小枝ハ其形狀種々ニ變化ス；或標本ニテハ短クシテ棍棒狀ヲナシ頂部ハ茄子狀ニ膨大シテ内部中空トナリ氣胞ヲナス；他ノモノニテハ長サ數寸ニ達シ、中

實、圓柱狀ニシテ全部同一ノ太サヲ有シ兩端稍細シ。或小枝ハ往々棍棒狀ヲナシ上部扁壓シ鋸齒ヲ存シ葉ノ如キ觀ヲ呈ス；此ノ如キ形狀ノモノハ四國以南九州方面ノモノニ多キカ如シ。氣胞ハ微突頭ヲナスカ又ハ上部ノ方ニ細クナリ或ハ紡錘狀ヲナシ時トシテハ第 CXXVIII 圖版 3 圖ニ示ス如ク葉ノ如キ翼片ヲ有スルモノアリ。遠藤氏ハ北海ノモノニ棍棒狀ノ小枝ヲ有スルモノ多ク南海ノモノニハ主枝ノ小枝ハ概テ細長シト云フ。其棍棒狀ヲナセルモノハ *β clavigerum* Harv. ノ記載ト一致ス。然レドモ此性質ノ極メテ不定ナルコトハ遠藤氏ノ說ノ如ク兩極端形ノ間種々差等アリ。枝ハ若キ時ハ腋生シテ矮小トナリ多數ノ小枝ヲ螺旋狀ニ存シ爲ニ腋ヨリ房ノ如ク叢生セル觀ヲ呈ス；此矮小ノ枝ハ漸次長大トナリ、其腋ノ側ニアリテ之ヲ支持シタリシ小枝ハ脱落ス；然レトモ枝此ノ伸長スルコトハ第一回ノ枝ニノミ限ラレ、其次位ノモノハ伸バコトナシ。——生殖器托（雌雄異株）ハ長橢圓形又ハ棍棒——圓柱狀ニシテ鈍頭、小枝ノ腋ニ叢生ス。色ハ黃褐色。質ハ多肉ニシテ乾燥スルトキハ紙ニ附着スルコト充分ナラズ。

體ハ充分ニ伸長スルトキハ往々三尺餘トナルト雖モ通常一尺内外ニシテ太サ 3-4 mm. アリ、房州勝浦清海村邊等及對州ノ如キ往々三尺ニ達ス、其短キハ主トシテ之ヲ刈取ル爲メノ如シ。枝ハ概シテ短ケレドモ或ハ 5-10 cm. ニ達ス。此植物ハ雌雄異株ニシテ多年生ナリ；然レドモ本體ハ年々枯死スルモノ、如ク、(或ハ所ニヨリ全二年ニ亘リテ生存スルモノアルカ後日ノ調査ヲ要ス)其死スル前、體ハ下部ヨリ匍枝ノ如キ短キ枝ヲ生ジ、之ニ嫩植物ヲ生ズ。本邦ニテハ各地之ヲ刈取ル爲メ其壽命ヲ知ルコト難シ。之ヲ蒸シ食用トスルニ、九州ニテハ主軸ノミヲ用井本土ニテハ主軸ヲ棄テ、枝ノミヲ食スルコト兩者全ク相反ス、奇ト云フベシ。

遠藤氏ハ本植物ヲ此屬ニ編入スルニ當リ多少ノ疑ヲ存シタリト雖モ予ハ氏ノ此分類ヲ奚當ナリト認ム；即チ葉ノ膨脹シテ氣胞ヲ兼テ、特別ニ發達セル氣胞ヲ有セザル點ハ實ニ此屬ノ特徵ニ合スレバナリ。

產地：高潮線ノ少シク下ノ岩ニ簇生シ、九州ヨリ陸中邊ニ到ル迄ノ太平洋岸ニ普通ナリ；又津輕海峽、トッフ、ゼニガメザワ、福山、函館(以上渡島、札幌農大)；九州東西兩岸；壹岐對馬；日本海ニハ少ナシ、西ヨリ丹後、但馬邊迄；朝鮮東岸注文津及釜山、亘理島及濟洲島。果實：—晩春。

第 CXXVIII 圖版。1: 細長キ小枝ヲ有スル幼體, $\frac{1}{1}$ —2: f. clavigerum ノ充分成長シタルモノニシテ生殖器托ヲ有ス(房州勝浦産)；×ハ繼ギ合ハセノ印, $\frac{1}{1}$ —3: f. clavigerum ノ體ニシテ葉ト葉ノ如キ翼片アル氣胞トヲ有スルヲ示ス(鹿兒島産), $\frac{1}{1}$ —4: 葉アル幼キ體(志摩濱島) $\frac{1}{1}$ —5: 同上ノ葉ト其各部ノ横斷面, $\frac{1}{1}$ —6: 根際枝ヲ示ス, $\frac{1}{1}$ 。

第 CXXIX 圖版, 5-12 圖 5-6: 匍枝ヨリ幼キ體ヲ生ズル狀；5 圖ノ a, b, ハ匍枝ニ生ジタル嫩植物ニシテ、圖ノ下方ノ匍枝ハ母體ト連絡シタルモノナリ；(6 圖, 房州館山, 大正二年五月二十七日), $\frac{1}{1}$ —7: 小枝ノ横斷面, $\frac{8}{1}$ —8: 7 圖ノ毛窠, $\frac{54}{1}$ —9: 生殖器托, $\frac{54}{1}$ —10: 雄性生殖器托ノ横斷, $\frac{42}{1}$ —11: 精子器, $\frac{390}{1}$ —12: 雌性生殖窠, $\frac{91}{1}$ 。

Dictyota dentata Lamour.

Nom. Jap.: *Toge-amidzi*.

PL. CXXIX, Fig. 1-4.

Dictyota dentata Lamour. *Dict. p.* 13; Kütz. Sp. Alg. p. 556; Id. Tav. Phyc. IX, t. 35 f. 1; J. Ag. Sp. Alg. I, p. 96; Id. Till Alg. Syst. V, p. 98; Id. Anal. Alg. I, p. 17; De Toni Syll. Alg. III, p. 268; Hauck et Richter. Phykotheke universalis no. 669.

Only one specimen now before us. *Frond* stupose from the base, even up to 9 cm. above the root, 15 cm. high, 3-4 times decomposed pinnate in an alternate manner. The outline of primary branches or pinnae somewhat ovate and that of pinnulae lanceolate which are similarly pinnated with simple or divided pinnellae whose margins are furnished with minute teeth. Branches of every order are slightly flexuose. Our specimen has branches very much twisted, probably owing to the effect of bad preparation. A few proliferous segments have been observed at the lower portion of frond, about 5 cm. above the root. *Colour* greenish brown. *Substance* membranaceous.

Hab.: Ryukyu Isl.

I have studied several reliable specimens such as Hauck et Richter *l.c.* and one from Jamaica determined by Mr. Börgesen, also another one from Port Antonio sent from Prof. Farlow.

PL. CXXIX, Fig. 1-4. Fig. 1: frond of *Dictyota dentata* Lam. in nat. size.—Fig. 2: pinna that is primary branch, $\frac{1}{4}$.—Fig. 3: pinnula and its portion, $\frac{3}{4}$.—Fig. 4: proliferous segments at the place about 5 cm. above the root, $\frac{1}{4}$.

Dictyota dentata Lamour.¹⁾

とげあみち 岡村 稱

第 CXXIX 圖版, 1-4 圖.

今只一標本アルノミ. 體ハ下部毛茸ヲ存シ, 毛茸ハ根ヨリ 9 cm ノ所マデ達シ, 15 cm 高ク, 3-4 回複羽狀ニ互生ス. 第一位ノ枝即羽枝ノ輪廓ハ稍卵形, 小羽枝ノモノハ披針狀ニシテ小羽枝ハ同様ニ羽狀ニ分岐シ, 其枝ハ單條又ハ更ニ分岐ス而シテ此等ノ枝ノ縁邊ハ小サキ鋸齒ヲ存ス. 各部ノ枝ハ輕ク雁木狀ニ屈曲ス. 予ノ標本ハ甚シクヨレタル枝ヲ有スレドモ此ハ恐ラクハ之ヲ製作スルニ當リテ注意セザリシニ歸スルナラン. 根ノ上約 5 cm ノ所ヨリ二三ノ副枝ヲ出ス. 色ハ綠褐色. 質ハ膜質ナリ.

產地: 琉球.

此種ヲ查定スルニ當リテハ Hauck et Richter ノ標品(上記), Jamaica 及ピ Port Antonio ヨリノ標品ヲ參考セリ.

第 CXXIX 圖版, 1-4 圖. 1: とげあみち, *Dictyota dentata* Lam., ノ體, $\frac{1}{1}$.—2: 第一位ノ枝即チ羽枝, $\frac{1}{1}$.—3: 小羽枝ト其一部, $\frac{3}{1}$.—4: 根ヨリ約 5 cm 上ノ處ヨリ副枝ヲ生ズルモノ, $\frac{1}{1}$.

1) あみちぐさ屬 (*Dictyota*) ノ性質ハ p. 16 ニアリ.



K. Okam. del.

Codium mucronatum J. Ag. var. *californicum* J. Ag. みる Fig. 1-9.
Caulerpa Fergussonii Murray ふぢのはづた Fig. 10-14.

Codium mucronatum J. Ag. var. **Californicum** J. Ag.

Nom. Jap.: *Miru*.

PL. CXXX, Fig. 1-9.

Codium mucronatum var. *Californicum* J. Ag. Till Alg. Syst. VIII, p. 43, Tab. I, Fig. 3; Kjellm. Marina Chlorophy. fr. Jap. p. 34; De Toni Syll. Alg. I, p. 495.—*Acanthocodium fragile* Suring. Alg. Jap. p. 23, t. VIII.—*Codium fragile* (Sur.) De Toni Syll. Alg. I, p. 495.—*C. tomentosum* Stackh.; Martens Preus. Exped., Bot., p. 113.

Fronds 10-30 cm. high, 1.5-3 mm thick in diam. or much thicker below, cylindrical, rising from scutate expanded disc, branching soon from the base in more or less regularly dichotomo fastigiate manner and the fronds assume a flabellate outline when spread over paper. Branches erect or erecto-patent standing with narrow axils and the upper segments are slenderer than the lower, and end in roundish apices. When young frond is covered with downy hairs but when old the hairs drop off leaving scars on the shoulders of utriculi. *Utriculi* are cylindrico-clavate, 5-7 times long as the diameter, mucronate, very acute when young, much shorter and often obtuse when adult. Wall of the apical portion of utriculus is thick and concentric striations are observed around the mucro which is itself stratified with thick curved, concentric layers. *Gametangia* elongato-ovate ($2 \times 9 \mu$ in one example), borne at about the middle portion of an utriculus. Female gametes are green and globular and much larger than male gametes which have milky appearance. *Colour* deep green. *Substance* spongy and juicy and the plant in, completely adheres to paper in drying.

Hab.: On rocks, shells and stones near the low tide, often in very deep portion. Common along the coasts of the Pacific and the Japan Sea; also in Hokkaido. Eastern coast of Chōsen at Seishin, Seikoshin, Gensan, Chumonjin, Moppo, Fusan. Fruits: summer (August at Prov. Boshyu).

PL. CXXX, Fig. 1-9. Fig. 1: smaller frond of *Codium mucronatum* var. *Californicum* J. Ag., $\frac{1}{1}$.—Fig. 2: sterile utriculi, $\frac{5.4}{1}$.—Fig. 3: apical mucro, $\frac{3.90}{1}$.—Fig. 4: apex of an utriculus viewed from above, showing concentric striations, $\frac{2.20}{1}$.—Fig. 5: utriculus bearing gametangia, $\frac{5.4}{1}$.—Fig. 6: young utriculus bearing a hair, $\frac{5.4}{1}$.—Fig. 7: male gametangium ($2 \times 9 \mu$), $\frac{5.4}{1}$.—Fig. 8: female sporangium, $\frac{5.4}{1}$.—Fig. 9: male gametes, $\frac{2.20}{1}$.

***Codium mucronatum* J. Ag. var. *Californicum* J. Ag.¹⁾**

み る 水 松.

第 CXXX 圖版, 1-9 圖.

體ハ 10-30 cm 高ク, 1.5-3 mm 太シ, 下部往々甚太キコトアリ, 圓柱狀ニシテ, 扁平ニ開張セル盤狀根ヨリ立チ, 基部ノ附近ヨリ多少正シク密ニ叉狀ニ分岐シ, 枝皆同一ノ高サニ達シテ扇狀ヲナス. 枝ハ直立又ハ直立—廣開シ, 腋狹ク, 上部ノ枝ハ下部ノモノヨリ細クシテ鈍圓ニ終ル. 幼者ハ體ノ全面殊ニ上部ニ産毛ノ如キ毛ヲ生ズレドモ老成スルトキハ脱落シ, 胞囊ノ肩部ニ其痕ヲ留ム. 胞囊ハ圓柱狀様棍棒狀ニシテ, 太サノ 5-7 倍長ク, 微突頭ヲ有シ, 幼者ハ甚シク尖銳ニシテ, 老成スルトキハ短クナリ又往々鈍頭トナル. 胞囊ノ頂端ノ壁ハ厚ク

1) みる屬 *Codium*, ノ性質ハ 72 頁ニ在リ.

シテ棘(即チ微突起)ノ周圍ニ地圖ノ毛山ノ如キ重圈狀ノ線ヲ見ルベク、其棘モ亦重圈狀ニ増厚ス。がめーと囊ハ長卵形(圖ニ示シタルモノニテ $2 \times 9 \mu$)ニシテ胞囊ノ略ボ中央部ニ着ク。雌性がめーとハ緑色ニシテ球狀ヲナシ、雄性がめーとヨリ遙ニ大ナリ而シテ後者ハ乳黄色ヲ呈ス。深綠色ナリ。質ハ海綿質ニシテ液汁ニ富ミ、乾燥スルトキハ紙ニ附着スルコト充分ナラズ。

產地：低潮線附近ノ岩石、介殼等ニ産シ、往々甚深キ處ニアリ。太平洋及日本海ノ沿岸ニ普ク、北海道ニ達ス(根室ノ一標本ニ胞囊ノ稍鈍頭ナルモノアリ)。朝鮮東岸清津、西湖津、元山、注文津、釜山、濟州島、木浦。果實：夏季(房州白濱ニテ八月)。

第 CXXX 圖版, 1-9 圖。1: みる, *Codium mucronatum* var. *Californicum* J. Ag. ノ稍小ナルモノ, $\frac{1}{1}$ 。—2: 實ナキ胞囊, $\frac{5.4}{1}$ 。—3: 頂端ノ突起, $\frac{3.90}{1}$ 。—4: 胞囊ノ頂部ヲ上ヨリ見タルモノニシテ、重圈狀ノ線ヲ示ス, $\frac{2.20}{1}$ 。—5: がめーと囊ヲ有スル胞囊, $\frac{5.4}{1}$ 。—6: 幼キ胞囊ノ毛アルモノ, $\frac{5.4}{1}$ 。—7: 雄性がめーと囊($2 \times 9 \mu$), $\frac{5.4}{1}$ 。—8: 雌性がめーと囊, $\frac{5.4}{1}$ 。—9: 雌性がめーと, $\frac{2.20}{1}$ 。

Caulerpa Fergusoni Murray.

Nom Jap.: *Fuzi-noha-zuta*.

PL. CXXX, Fig. 10-14.

Caulerpa Fergusoni Murray on new sp. of *Caulerpa* (Transac. of the Linn. Soc. London, 1891) p. 212, pl. 53, f. 1-2; Weber v. Bosse Monogr. d. *Caulerpa*, p. 389, Pl. XXXIV. Fig. 12; Svedelius

Ecol. and Syst. Studies of the Ceylon Sp. of *Caulerpa* p. 140, f. 51; Reinke Ueber *Caulerpa* 1899, p. 43. f. 68.

Stolon cylindrical, naked. Vertical axis simple or alternately branched, compressed, elongated (some attain 22 cm. in length), articulated in short distances with cuneato-obovate joints which measure 6-7 mm. in length. *Ramenta* compressed, obovate, tapering below, rounded at apex, distichous and opposite arising from almost every articulation, about 1 cm. long, 5-6 mm. broad. *Colour* herbaceous green. *Substance* juicy and membranaceous.

Hab.: Perhaps on rocks in deep waters. Prov. Hizen, Provs. Shima, Sagami and Kadsusa.

PL. CXXX, Fig. 10-14. Fig. 10: frond of *Caulerpa Fergusoni*, Murray, $\frac{1}{2}$.—Fig. 11: ramentum, $\frac{1}{2}$.—Fig. 12: one of articulations, $\frac{1}{2}$.—Fig. 13: cross-section of the articulation of fig. 12, $\frac{1}{2}$.—Fig. 14: cross-section of the ramentum indicated, $\frac{1}{2}$.

Caulerpa Fergusoni Murray.¹⁾

ふぢのはづた。岡村 稱。

第 CXXX 圖版, 10-14 圖。

匍匐莖ハ圓柱狀ニシテ, 平滑, 附屬物ナシ。直立莖ハ單條又ハ分岐シ, 互生ス, 扁壓, 長ク (時ニ 22 cm ニ達スルモノアリ), 少距離ニ於テ關節シ, 關節ハ倒卵形ニシテ上端ヲ截リタル如キ形ヲナシ其長サ 6-7 mm. アリ。葉即らめんたハ扁壓, 倒卵形ニ

1) いはづた屬 (*Caulerpa*) ノ性質ハ p. 19 ニアリ。

シテ頂端圓ク基部細ク,各節ヨリ對生シテ約 1 cm 長ク, 5-6 mm. 潤シ. 草色ナリ.

產地: 多分深所ノ岩ニ産スルモノナルベシ. 肥前茂木及口ノ津, 志州和具, 相州松輪及江ノ島, 上總.

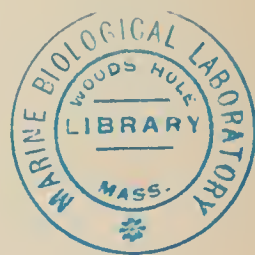
分布: セーロン.

第 CXXX 圖版, 10-14 圖. 10: ふちのはづた, *Caulerpa Fergusoni* Murr. ノ體, 1.—11: 葉, 1.—12: 一關節, 1.—13: 12 圖ノ關節ノ横斷, 1.—14: 圖ニ示シタル位置ノ葉ノ横斷, 1.

CORRECTION.

For *Caulerpa Fergusonii* in Pl. CXXX read *C. Fergusoni*.

(Pl. CXXVI—CXXX, December 1914)





K. Okam. del.

Vidalia obtusiloba (Mert.) J. Ag. かへりなみ.

Vidalia obtusiloba (Mert.) J. Ag.

Nom. Jap.: *Kaeri-nami*.

PL. CXXXI.

Vidalia obtusiloba (Mert.) J. Ag. Sp. Alg. II, 3, p. 1123; Falkenberg Rhodom. p. 429 (non Borner); De Toni Syll. Alg. IV, p. 1102. —*Rytiphloca obtusiloba* Ag.; Kg. Sp. Alg. p. 846.

Only one specimen now before us. *Fronde* rising from a circular disc, linear, with the midrib thickened below into a short stem-like, winged portion, 6.5 cm. high, 4–6 mm. broad, flat, undulated and serrato-dentate at margin. The midrib more or less thickened for the most part becomes fainter upward, with very patent and faint veins extending alternately from the midrib to marginal teeth. Branches standing in 2–3 times pinnate and alternate manner, arise from margins as well as proliferate from the midrib and are slightly narrowed at the base, ending in roundish-obtuse in-rolled apices. On unfolding the inrolled apex of a branch, the growing apices of lateral branches and finger like young marginal teeth are displayed, all of which are strongly incurved to the ventral side of frond. Marginal teeth become obsolete in the lower portions of branches or assume deltoid shapes. When young they are fine and subulate, strongly involuted, scarcely 1 mm. long in the longest one, and in a fructified frond stichidia are produced in them. *Stichidia* formed in pinnules of pinnately lobed and submultifid teeth, linear, containing a double row of tetrasporangia. The midrib is much thickened on the ventral side, toward which curve the apices of branches and marginal teeth. On

the dorsal median line of every young segment, for instance of marginal teeth, a single row of dichotomous "hair-leaves" is longitudinally arranged. The cortical and inner cells covering the midrib portion of the upper part of a branch are elongated, while those of the remaining portion are irregularly polygonal. On the cross-section of frond through the midrib 5 pericentral cells are observed, of which the unpaired one stands on the ventral side and the paired ones on both flanks. *Colour* vinoso-red. *Substance* membranaceous and the plant does not adhere to paper in drying.

Hab.: Oshima (Prov. Satsuma).

PL. CXXXI. Fig. 1: frond of *Vidalia obtusiloba* (Mert.) J. Ag., $\frac{1}{1}$.—Fig. 2: apical portion of a branch viewed from the ventral side, $\frac{12}{1}$.—Fig. 3: cross-section of the lower portion of a branch; the upper side, dorsal; the lower, ventral, $\frac{12}{1}$.—Fig. 4: midrib of Fig. 3 magd.; *a*, the central axis; *a'*, the unpaired pericentral cell standing on the ventral side; *b, c, e, f*, paired pericentrals standing on flanks, $\frac{91}{1}$.—Fig. 5: cross-section of a upper branch bearing a thin midrib; characters same as Fig. 4, $\frac{175}{1}$.—Fig. 6: cross-section of a branch showing a vein, *v*, arising from the axis *a*, $\frac{175}{1}$.—Fig. 7: surface-view of cortical and infra-cortical layers over the midrib, $\frac{175}{1}$.—Fig. 8: surface-view of the cortical layer of membranous portion, $\frac{175}{1}$.—Fig. 9: inrolled apex of a branch unfolded, $\frac{220}{1}$.—Fig. 10: laciniae of a marginal tooth, $\frac{91}{1}$.—Fig. 11: lacinia of a marginal tooth showing "hair-leaves," *h, h*, $\frac{220}{1}$.—Fig. 12: one of laciniae magd., $\frac{220}{1}$.—Fig. 13: hair-leaf, $\frac{390}{1}$.—Fig. 14: some of laciniae of a marginal tooth transformed to stichidia, $\frac{42}{1}$.—Fig. 15: stichidium, marked *a* in Fig. 14, magd., $\frac{175}{1}$.

Vidalia Lamouroux.

かへりなみ屬.

RHODOMELACEAE. ふぢまつも科.

體ハ直立シ、稍多肉—軟骨様ニシテ、「バンド」狀ニ扁壓シ又ハ扁平、時トシテハ下部隆起セル中肋ヲ有シ、往々ヨレタリ。多管軸ハ5周心管ヨリ成リ(對ヲナサザルモノハ腹面ニアリ)其對ヲナセル周心管ハ二個宛中軸ノ兩側ニ存シ、此細胞ト同長同徑ノモノ横又ハ斜ニ上方ニ列シテ兩翼ヲ形成シ斯克シテ二層ノ細胞ヨリ成レル薄キ葉面ヲ作ル；其二層ノモノハ早クヨリ小細胞ニテ成レル可ナリ薄キ皮層細胞ヲ以テ密ニ蔽ハル。主枝ハ伸長シ、腹面ノ方ニ屈曲シタル又ハ卷キ込ミタル頂端ヲ有シ、縁邊ヨリ羽狀ニ側枝ヲ互生ス；側枝ハ基部甚ダ廣ク、内長性ニシテ、時トシテハ強ク伸長シテ主枝ト成ル、然レドモ多クハ僅ニ發達シ、長キ又ハ短キ小羽枝トナリテ同様ニ羽狀ヲナシ又ハ大ナル若クハ小ナル縁邊ノ鋸齒トナル；此外又内長性ノ分岐セザル又ハ分岐セル側枝アリ、此モノハ一ツツ、若クハ集リテ主枝ノ(中肋ノ)中軸ニ沿ヒ又ハ縁邊ヨリ生ズル側枝ノ(側脈ノ)基部ニ沿ヒテ其腹面ヨリ副出ス。斯克テ縁邊ヨリ生ズルモノト表面ヨリ副出セル側枝トヲ以テ分岐ス。總テ枝ハ卷キ込ミタル成長部ノ背面ノ中央線ニ沿フテ、早落性ナル一列ノ毛狀葉ヲ有ス。——四分孢子囊ハ縁邊又ハ表面ヨリ副出セル側枝ノ小裂片(即チ小羽枝)ノ「スチキジア」狀ニ變形シタルモノニ生ズ；「スチキジア」ハ僅ニ形成セラレ、時トシテハ實ヲ熟セザル部分ト全ク區別スベカラザル程度ニアリテ扁平トナリ、多管軸ノ枝ガ狭細ナル翼片ノ如ク成レルモノトナリテ、腹面ノ方ニ屈曲シタル頂端ヲ有シ、腹面ニ沿ヒテ二縦列ニ孢子ヲ藏ス；孢子ハ各關節ニ二個ヅ、形成セラレ、斜ニ腹面ノ

方ニ向ケラレタル周心管ヨリ形成セラル、而シテ外面ニハ二個ノ同長ナル蓋細胞ヲ以テ蔽ハル。精子器及胎原列ハ縁邊ヨリ又ハ表面ヨリ生ズル側枝ノ上部ノ小羽枝ノ頂端ニ形成セラレ其小羽枝ノ背面ニ於テ縦列ヲナシテ多少澤山ニ形成セラル。囊果ハ概テバラバラニ形成セラル。

暖海ノ産ニシテ約7種アリ、ニウフホルランド、地中海、暖部大西洋沿岸、オウストラリアノ西岸等ニ在リ。此屬ハ *Enantiocladia* ト *Rytiplaea* トニ最モ近キモノニシテ、又 *Amansia* トモ近キ類縁ヲ有ス。——屬ノ名ハ佛國ノ探檢家 Honorato Vidal ヨリ起ル。和名カヘリなミハ縁邊ノ鋸齒ノ屈曲スル狀恰モ波ノ打返ヘスガ如キニ取レリ。

Vidalia obtusiloba (Mert.) J., Ag.

カヘリなミ 岡村稱。

第 CXXXI 圖版。

唯一標本アルノミ。體ハ圓盤狀根ヨリ立ち、線狀、中肋ヲ有シ、中肋ノ下部ハ太クナリテ短キ莖ノ如ク成リ、其部ハ幾分膜ヲ存ス、高サ 6.5 cm., 幅 4-6 mm. ニシテ、扁平、波縮シ、縁邊鋸齒ヲナス。中肋ハ大部分多少太ケレドモ、上方ニ纖微トナリ、中肋ヨリ縁邊ノ鋸齒ニ達スル細脈ヲ有シ、脈ハ細微ニシテ互生シ、殆ド水平ニ近ク廣開ス。枝ハ 2-3 回羽狀ニ互生シ、兩縁ヨリ並ニ中肋ヨリ出デ、基部少シク狭ク、頂端鈍圓ニシテ其部ハ固ク卷ク。此卷キタル部分ヲ展開スルトキハ枝ノ成長點及指狀ヲナセル縁邊ノ幼キ鋸齒ヲ見ルベク、此等ハ皆體ノ腹面ノ方ニ強く屈曲ス。縁邊ノ鋸齒ハ枝ノ下部ニテハ不明トナリ又ハ三角狀ヲナス。其幼時ニ當リテハ細クシテ錐ノ如ク、固ク蕨狀ニ卷キ、

其最モ長キモノニテ 1 mm. ヲ超ヘズ, 實ヲ有スル體ニテハ此部ニ「スチキジア」ヲ生ズ. 「スチキジア」ハ羽狀ニ分岐セル且多數ニ分裂シタル鋸齒ノ小羽枝ヨリ變生シ, 線狀ニシテ二列ノ胞子ヲ藏ス. 中肋ハ腹面ニ於テ甚シク増厚シ, 枝端及縁邊ノ鋸齒等皆腹面ノ方ニ屈曲ス. 各幼部ノ背面ノ中央線ニ沿フテ叉狀ヲナセル毛狀葉ノ一縱列アリ; 例ヘバ鋸齒ノ背面ニ於ケル如キ之ヲ見ルベシ. 枝ノ上部ノ中肋部ヲ蔽ヘル皮層及内皮層ノ細胞ハ長キ多角形ニシテ, 他ノ部ノモノハ不規則ナル多角形ナリ. 中肋ノ横斷面ヲ見ルニ 5 條ノ周心管アリテ其對ヲナサバルモノハ腹面ノ方ニ, 對ヲナセルモノハ翼部即チ中肋ノ左右ニ存ス. 色ハ葡萄酒色ナリ. 質ハ膜質ニシテ乾燥スルトキハ紙ニ附着セズ.

產地: 奄美大島.

分布: 太西洋即チ南亞米利加熱帶部, ブラジル, メキシコ,

第 CXXXI 圖版. 1: *Vidalia obtusiloba* (Mert.) J Ag., かへりなみ, ノ體, $\frac{1}{1}$.—2: 枝ノ頂端ヲ其腹面ヨリ見タルモノ, $\frac{1^2}{1}$.—3: 枝ノ下部ノ横斷面; 上側ハ背面, 下側ハ腹面, $\frac{1^2}{1}$.—4: 第3圖ノ中肋ヲ廓大シタルモノ; *a*, 中軸; *d*, 對ヲナサバル周心管ニシテ腹面ニ在ルモノ; *b, c, e, f*, ハ對ヲナセル周心管ニシテ中軸ノ兩側ニ在ルモノ; $\frac{9^1}{1}$.—5: 細キ中肋ヲ有スル上部ノ枝ノ横斷面; 指字ハ第4圖ニ同ジ, $\frac{17^5}{1}$.—6: 中軸, *a*, ヨリ, 側脈, *v*, ノ出ルコトヲ示ス, 枝ノ横斷面, $\frac{17^5}{1}$.—7: 中肋ノ上ヲ蔽ヘル皮層及皮下層ノ細胞ヲ表面ヨリ見タルモノ, $\frac{17^5}{1}$.—8: 翼部ノ皮層ノ表面, $\frac{17^5}{1}$.—9: 枝ノ卷込ミタル成長點ヲ展キタルモノ, $\frac{22^0}{1}$.—10: 縁邊ノ鋸齒ノ裂片, $\frac{9^1}{1}$.—11: 縁邊ノ鋸齒ノ裂片ニ毛狀葉, *h, h*, ヲ存スル狀, $\frac{22^0}{1}$.—12: 鋸齒ノ裂片ノーツ, $\frac{22^0}{1}$.—13: 毛狀葉, $\frac{32^0}{1}$.—14: 鋸齒ノ

裂片ヨリ「スチキジア」ヲ變成セルモノ, $\frac{42}{1}$.—15: 第 14 圖ノ α ト
記シタル「スチキジア」, $\frac{175}{1}$.

Compsopogon Ōishii Okam. sp. nov.

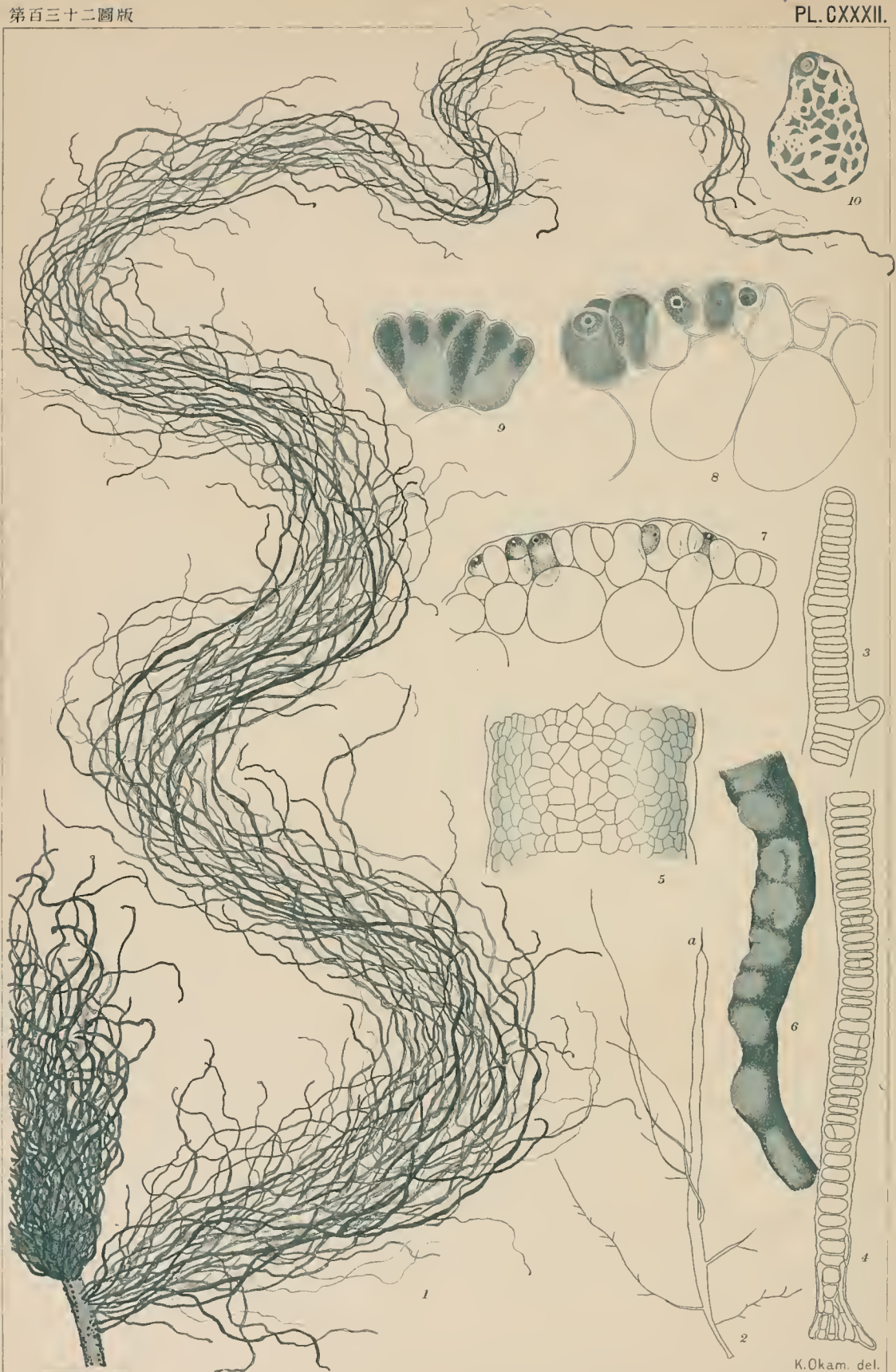
Nom. Jap.: *Ōishi-sō*.

PL. CXXXII—CXXXIII, Fig. 1-13.

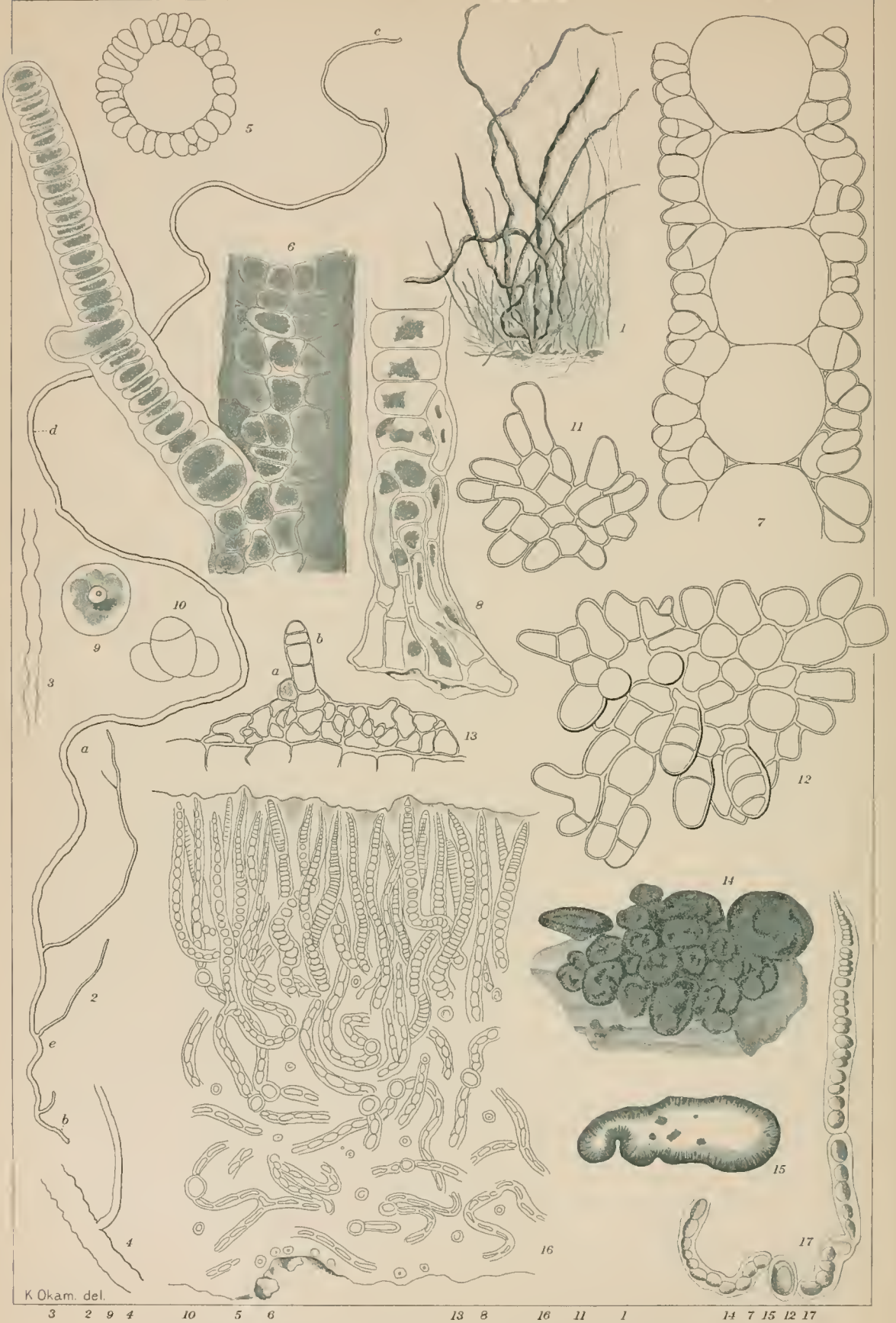
Diagn. *Fronde* caespitose, filiform, 1-1.5 mm. thick, elongated, rather harsh to touch and fragile, of dark greenish blue-violet colour, laterally branched, capillary-fine in young branches, becoming unequally thick in older portions, with globular or depresso-globular central cells in fully grown portion, with articulations not externally constricted, thinly corticated (2-cell-layers thick), afterward becoming hollow by the decaying off of the axial cells when the branches attain the thickness of some 400 μ in diameter.

Hab.: On the leaf and stem of *Valisneria spiralis*, gravels, woods etc. in a brook running from spring (temp. of water 15-17°C) Yanokuchi (Prov. Musashi); Riv. Tsuchi-kuro (Nagasaki Pref.).

Descrip.: *Fronde* densely tufted, filiform, about. 1-1.5 mm. thick in the lower portion of a thickened frond, elongated, often 30 cm. long, usually crooked and somewhat entangled at the lower portion. Plants have a more or less traceable main segment and 2-3 times branch laterally in an alternate manner; younger branches are capillary-fine and those standing at the lower portion of frond become somewhat thickened like the main segments. Young



1 9 5 8 2 7 6 10 3 4
Compsopogon Ōishii Okam. n. sp. おほいしさう.



Compsopogon Ōishii Okam. n. sp. おほいしう. Fig. 1-13.
Brachytrichia Quoyi (Ag) Born. et Flah. あいみどり. Fig. 14-17.

branches consist of a single longitudinal row of disc-shaped cells and the plant makes its growth by the terminal as well as intercalary cell-divisions. The articulations are $\frac{1}{2}$ – $\frac{1}{3}$ as shorter as the diameter; soon longitudinal partitions are formed near margins, giving rise to the central and cortical cells. By further divisions a cortical layer is produced covering the central cell. As the branch grows in length the central cells increase in size, and as it thickens it becomes unequal in thickness being bullato constricted at short intervals. Cells of the primary articulation now become almost globular or slightly depressed and those of the cortical layer are either undivided or here and there divided into two. In this stage the central cells are scarcely visible through the cortical layer and the articulations are not externally constricted. As the frond attains a thickness of some 300–400 μ in diameter, the central cells show a tendency to be destroyed and in a thicker portion measuring 500–750 μ there is no remain of the central cells leaving the interior of frond hollow. The fully formed cortical layer consists of two layers of cells, of which the inner is larger and roundish, while the outer is smaller and anticlinally a little elongated. Cortical cells are not elongated in surface view, but irregularly polygonal and closely disposed. They contain a distinct nucleus and many roundish-angular chromatophores, while cells of the inner layer are almost empty and colorless. On account of the fragile substance the frond becomes, as the plant grows in age, rather naked by dropping off of branchlets and apices of branches become bluntish.

Monospores (aplanospores) are formed in monosporangia which are produced either directly from a cortical cell or from a cell

produced by horizontal or oblique partitions. They contain very deeply coloured content and a nucleus.

The *development* of the plant from the monospore is quite same as that observed by Möbius in *C. chalybens*. Kuetz. The monospores which have been set free probably just to germinate measure 0.015–0.02 μ in diameter. The young prothallium which I could obtain on a leaf of *Valisneria spiralis* consisted of 4 cells, of which the larger central one has cut off a cell by a horizontal partition (Pl. CXXXIII, f. 10). After that there is formed a somewhat radiately branched flat disc which adheres to the substratum. The prothallium which is single-layered at the beginning now becomes parenchymatic by repeated cell-divisions and a flattish low mound like body is formed. When the prothallium attains the size of some 130 μ , some of cells of the upper layer form branches directed upward. They consist at first of a single row of cells. Larger prothallium, more numerous the number of vertical branches. As they grow in length, the lower cells cut off a cell at the lower corner which elongates into a root-fibre. Root fibres which are articulated run in both intra- and extra-cortical ways and by coalescing together form a somewhat conical holdfast. When the vertical fronds are firmly established the prothallium goes down to the ground. After that, originally single row of cells of a young frond becomes two layered in the manner above stated. *Colour* dark greenish-blue violet. *Substance* fragile and somewhat harsh to touch; when dried, the plant does not adhere to paper.

There is no doubt that the present plant has a very close affinity with *C. coerules* (Balb.) Mont. as the size, thickness and colour show its resemblances. Of the anatomical character of the latter much is not known, as far as I am aware, except Kuetzing's

description and illustrations (Kuetz. Sp. Alg. p. 432 and Tav Phyc. VII, t. 88, f. II.) and Thaxter's recent investigations (R. Thaxter Notes on the Str. and Repr. of *Compsopogon* in Bot. Gaz. Vol. XXIX, P. 259-267, pl. XXI, 1900). Kuetzing illustrates 3 cell-layered cross-section of the frond without central cell. He does not clearly mention that the frond is hollow, only stating that , 'articulis in ramis primariis obsoletis.' Whether this statement means that the frond is hollow or not is not clear. But Thaxter describes and illustrates that "the corticating cells are separated into two well-defined layers which may be increased to 3 or even 4 in older axes like that shown in Fig. 13, a portion of the axial cell being indicated at *x*" (Thaxter l.c. p. 262). Considering that Thaxter's material is *C. coeruleus*, it is evident that it has thickly corticated frond with a central cell persisting. Such a structure is not the case in the present plant; in ours the cortical cells are not more than two layers in the branches thicker than 400 μ and in the branches of such a thickness the central cells are already disappeared. De Toni's remark saying "cellulae corticales e superficie visæ sunt elongatae, irregulares, acute contiguae" and Kuetzing's illustration representing regularly arranged elongated cortical cells are disproved by Thaxter's description and illustrations (i.e. "the corticating cells are irregularly polygonal").

Thus, the present plant differs from *C. coeruleus*, as far as I can judge from the literature concerned by the brittle substance, by disappearing of the central cells in older portions and by fewer cortical layers as well as by slenderer habit of the frond.

PL. CXXXII. Fig. 1: fronds of *Compsopogon Oishii* Okam. sp. n. on the leaf of *Valisneria spiralis* in nat. state and size.— Fig. 2: small frond, $\frac{1}{2}$.—fig. 3: portion of fig. 2, marked *a*

magd., $\frac{220}{1}$.—Fig. 4: lower portion of a young filament, $\frac{140}{1}$.—Fig. 5: portion of the lower part of frond in fig. 1, magd., $\frac{220}{1}$.—Fig. 6: portion of a thicker branch, showing unequal thickness, $\frac{12}{1}$.—Fig. 7: cross-section of a fertile branch, a little thicker than $400\ \mu$, $\frac{390}{1}$.—Fig. 8: portion of fig. 7 showing monospores, $\frac{340}{1}$.—Fig. 9: monospores, $\frac{340}{1}$.—Fig. 10: vegetative cell, $\frac{340}{1}$.

PL. CXXXIII, Fig. 1-13. Fig. 1: younger and older fronds in nat. state and size.—Fig. 2: a 28 cm. long filament detached, (thickness ca. $\frac{2}{1}$); portion marked *a*, ca. $800\ \mu$ thick; *b*, $500\ \mu$; *c*, $300\ \mu$.—Fig. 3: portion of fig. 2 marked *d*, magd. to show unequal thickness.—Fig. 4: portion of fig. 2 marked *e*, magd.—Fig. 5: cross-section of a branch $200\ \mu$ thick, the central cell still present, $\frac{140}{1}$.—Fig. 6: surface-view of a thick branch, $\frac{390}{1}$.—Fig. 7: longitudinal section of a branch showing the central cell, $\frac{220}{1}$.—Fig. 8: rooting portion of filament shown in fig. 4 of PL. CXXXII, magd., $\frac{390}{1}$.—Fig. 9: monospore ($0.015-0.02\ \mu$), $\frac{600}{1}$.—Fig. 10: monospore just germinated, $\frac{600}{1}$.—Fig. 11: young prothallium, $\frac{340}{1}$.—Fig. 12: more advanced prothallium having 6 vertical branches, $\frac{220}{1}$.—Fig. 13: vertical section of a prothallium on the leaf of *Valisneria*, having two young fronds *a* and *b*, $\frac{220}{1}$.

Compsopogon Mont., 1846.

おほいしさう屬.

COMPSOPOGONACEAE (BANGIALES).

おほいしさう科(うしけのり族).

體ハ直立シ、絲狀ニシテ側面ヨリ分岐シ、中軸ハ大ナル圓盤狀若クハ麥酒樽狀ノ細胞ヨリ成リ、一層若クハ數層ノ細胞ヨ

リ成レル薄キ皮層ヲ有ス。細胞ハ一個ノ核ヲ有シ、色素體ハ多數ニシテ圓盤狀ヲナシ、暗藍綠色若クハ銅青色(又ハ暗黃色?)ヲナス。生殖ハ或皮層細胞(單一胞子囊)中ニ形成セラレタル單一胞子 (monospore) ニ依ル。

淡水ニ産スル紅藻ニシテ熱帶地方ニ多シ。Thaxter 氏ノ研究ニ依リ *C. coeruleus* ニハ macroaplanospore ト microaplanospore トアルコトヲ知ル。——屬ノ名ハ *Compsos* (美シキ) ト *pogon* (毛) トヨリ成ル。和名おほいしさうハ此植物ヲ發見シタル大石芳三氏ノ名譽ノ爲ニ名ヅク。

Compsopogon Oishii Okam. 新種.

おほいしさう 岡村稱.

第 CXXXII—CXXXIII 圖版, 1-13 圖.

性質: 體ハ叢生シ長ク、絲狀, 1-1.5 mm. 太ク、少シクザラザラスル氣味アリテ脆ク、暗綠藍青色ニシテ、側面ヨリ分岐シ、幼キ枝ハ毛細ノ如ク細ク、老成部ハ廣狹一ナラズ、充分成長シタル部分ハ球狀又ハ少シク扁クナリタル球狀ノ細胞ヨリ成レル中軸ヲ有シ、關節ハ外面ニハクビレズ、薄キ皮層ヲ被ムリ、(皮層ハ二層ノ細胞ヨリ成ル)後枝ノ直徑約 400μ ニ達スル時ハ中軸細胞死スル爲メ中空トナル。

產地: 湧水ヨリ流出スル小流ノおほいともノ體上、小石、木杭等ノ上ニ生ズ(水温 $15-17^{\circ}\text{C}$); 武州矢ノ口村清水川(明治三十三年十二月大石芳三); 長崎縣土黒川。

記載: 體ハ密ニ叢生シ、長ク、絲狀、太キ體ノ下部ニ於テ約 1-1.5 mm. 太ク、往々 30 cm. ニ達シ、通常下部ニ於テ屈曲シ稍錯綜ス。體ハ多少辿リ得ベキ主枝ヲ有シ、2-3 回互生ニ分

岐ス；幼キ枝ハ毛細狀ニ細ク、體ノ下部ノモノハ稍主枝ノ如ク太シ。幼キ枝ハ圓盤狀細胞ノ一縱列ヨリ成リ頂細胞並ニ中間細胞ノ分裂ニヨリテ伸長ス。其關節ノ長サハ直徑ヨリ短キコト $\frac{1}{2}$ — $\frac{1}{3}$ ニシテ、直ニ縁ニ近ク縱ニ分裂シ以テ中心細胞ト皮層細胞トヲ生ズ。斯クテ後屢々分裂シテ一層ノ皮層ヲ作リテ中心細胞ヲ蔽フニ至ル。枝ノ伸長スルニ從テ中軸細胞モ大キサヲ増シ、枝ノ太クナルニ從テブクブクト膨ラミテ廣狹不同トナル。斯ノ如キ太サノ枝ニテハ中軸ノ細胞ハ殆ド球狀又ハ少シク扁クナリタル球狀ニシテ皮層ノ細胞ハ一層若クハ所々二個ニ分裂ス。此際中軸細胞ハ皮層ヨリ容易ニ透視スベカラズ、且關節ハ外面ニクビレルコトナシ。既ニ直徑約 300—400 μ ノ太サニ達スルトキハ中軸ハ將ニ消滅セントスルニ至リ、500—750 μ ノ太サノ部分ニテハ中軸ハ既ニ存スルコトナク體ハ中空トナル。斯クテ充分ニ形成セラレタル皮層ハ二層ノ細胞ヨリ成リ、其内部ノモノハ大ニシテ圓ク、外部ノモノハ小ニシテ外方ニ少シク伸ビタリ。皮層細胞ハ之ヲ表面ヨリ視ルニ長キコトナク、不規則ナル多角形ニシテ密集ス。外部皮層細胞ハ一個ノ明ナル核ト多數ノ圓形—多角形ノ色素體ヲ含ム、然レドモ内部ノ皮層細胞ハ殆ド空虛ノ如クシテ無色ナリ。質脆キ爲メ、植物ノ老成スルニ至レバ小枝ハ脱落スルヲ以テ體ハ枝稍少ナクナリ枝端ハ鈍圓トナル。

單一胞子 (monospores) ハ直接ニ皮層細胞ヨリ變成セル若クハ水平又ハ斜面ノ分裂面ニテ皮層細胞ヨリ形成セラレタル胞子囊ニ生ズ。胞子ハ一個ノ核ト濃キ内容トヲ藏ス。

胞子ヨリ植物體ヲ發生スル順序ハ Möbius 氏ガ *C. chalybeus* Kuetz. ニ就テ視察シタル所ト異ナラズ。恐ラク將ニ發芽セントスル如キ胞子ハ直徑 0.015—0.02 μ ニシテ、予ガおほいとも

ノ葉上ニ得タル幼キ前苗體ハ4個細胞ヨリ成リタリ、其4個細胞中、中央ノ一ハ水平ノ分裂面ニテ一個細胞ヲ分裂シタリ(第CXXXIII圖版、10圖)。此以後稍放射狀ニ分岐シタル扁キ盤狀ノ前苗體トナリテ他物ニ固着ス。前苗體ハ初メ一層ナレドモ後屢分裂シテ柔組織トナリ遂ニ扁キ低キ馒头形ノモノヲ生ズ。其漸ク約130 μ 許ノ大サニ達スルトキハ上層ノ或細胞ハ上方ニ向ケラレタル枝ヲ生ズ;此枝ハ始メ一列ヨリ成ル。前苗體ノ大ナル程上方ニ立ツ枝ノ多キハ自然ノ數ナリトス。此枝伸長スルトキハ下方ノ細胞ハ其下部ノ隅ニ於テ一個ノ細胞ヲ分裂シ、此細胞伸長シテ根トナル。根ハ關節シタル絲狀細胞ヨリ成リ、細胞膜内若クハ膜外ヲ通過シテ下方ニ走り、相集リテ稍圓錐狀ノ附着器ヲ形成ス。斯クテ直立スル體ノ充分形成セラル、ニ至ルトキハ前苗體ハ死ス。後、原來一縱列ヨリ成レル幼體ハ上述シタル如キ方法ニテ二層ノ細胞ヨリ成レル絲狀ノ體トナルナリ。

色ハ暗綠藍色ナリ。質ハ脆クシテ手觸リハ稍粗ク、乾燥スルトキハ紙ニ附着セズ。

類縁：本植物ガ *C. coeruleus* (Balb.) Mont. ニ親縁ヲ有スルコトハ些ノ疑ヲ容ル、餘地ナシ;即チ體ノ大サ、太サ及色皆相似タリ。予ノ知ル處ニ依レバ、從來該種ノ構造ニ就テハ Kuetzing ノ記載及圖(Kütz. Sp. Alg. p. 432; Tav. Phyc. VII, t. 88, f. II.)ト Thaxter ノ研究(Thaxter: Notes on the Str. and Repr. of Compsopogon, in Bot. Gaz. Vol. XXIX, p. 259-267, Pl. XXI, 1900)トノ外詳細ナルモノアラズ。Kuetzing ハ3層ヨリ成レル横斷面ヲ圖說スルモ其圖ニ中軸ヲ缺キタリ。氏ハ體ノ中空ナルコトヲ明ニ記サズ、唯“主枝ニテハ關節ハ不明ナリ”ト記セルノミ。此記事ハ以テ體ノ中空ナルカ否ヤヲ明ニシタリト云フベカラズ。然レドモ

Thaxter ハ “皮層ハ明ニ二層ヨリ成リ老成部ニテハ 13 圖ニ示ス如ク 3 層又ハ 4 層ニモ成リ, 中軸ヲ有スルコトハ圖ニ示ヲ以テ記セルガ如シ” ト記シテ其如ク圖說セリ. 氏ノ研究シタル材料ハ *C. caeruleus* ナリト云フヲ以テ考フルニ此植物ハ厚キ皮層ヲ有シ, 中軸細胞ノ永存スルコトハ明ナリ. 斯ノ如キ構造ハ本植物ニハ見ルベカラズ. 今おほいしさウニテハ皮層ハ 400μ 餘ノ太サヲ有スル枝ニ於テ二層ヨリ多カラズシテ斯ル太サノ枝ノ中軸ハ既ニ消滅シテ中空トナレリ. De Toni ガ “皮層細胞ハ之ヲ表面ヨリ見ルニ長クシテ不規則ニ密集ス” ト記シ Kützing ノ圖ニ正シク整列セル細長キ皮層細胞ヲ示シタルモノハ Thaxter ノ記載ノ圖ニテ其然ラザルコトヲ知ル (即チ “皮層細胞ハ不規則ニ多角形” ナリト記セリ).

以上ノ根據ニ依リ, 予ガ參考書ニテ考究シタル範圍ニテハ本植物ハ *C. caeruleus* ト異ナルコト以下示ス所ノ諸點ニ在リト考フ; 即チ體質ノ脆キコト, 老成部ニ中軸細胞ノ消滅スルコト, 皮層ノ薄キコト, 及ビ體ノ稍細キコト是ナリ.

本植物ハ明治三十三年十二月二日大石芳三氏ガ多摩川口ニテ鮎ノ仔魚ヲ採集中長サ三分許リノ小片ヲ得タルヨリ予ノ研究ニヨリテ其 *Compsopogon* ナルコトヲ知リ氏ヲシテ上流ニ索メシメ遂ニ武州矢ノ口村清水川ニ其多量ヲ得タルモノナリ. 本邦此屬アルヲ知レルハ實ニ氏ノ盡力ノ致ス所ナリ.

第 CXXXII 圖版. 1: おほいしさウ, *Compsopogon Oishii*, 新種, ノおほいともノ葉ニ生ズル狀, $\frac{1}{1}$. — 2: 多摩川口羽田村字東ニテ初メテ得タルモノ, $\frac{8}{1}$. — 3: 第二圖 α ノ部ヲ示ス, $\frac{220}{1}$. — 4: 幼キ體ノ下部, $\frac{140}{1}$. — 5: 第一圖ノ體ノ下部ノ一部, $\frac{230}{1}$. — 6: 太キ枝ノ一部ニテ太サノ各部同ジカラザルヲ示ス, $\frac{12}{1}$. — 7: 400μ ヨリ少シ

ク太キ部分ノ實アル枝ノ横斷面, $\frac{390}{1}$.—8: 第7圖ノ一部ニテ胞子ヲ示ス, $\frac{340}{1}$.—9: 胞子, $\frac{340}{1}$.—10: 營養細胞, $\frac{340}{1}$.

第 CXXXIII 圖版, 1-13 圖. 1: 老幼ノ體ヲ示ス, $\frac{1}{1}$.—2: 28 cm. ノ長サアルモノ太サノミ二倍ニシテ示ス); *a* 部, 約 800 μ 太シ; *b* 部, 500 μ ; *c* 部, 300 μ .—3: 第2圖 *d* 部ヲ廓大シテ太サノ同シカラザルヲ示ス.—4: 第2圖 *e* 部廓大.—5: 200 μ 太キ枝ノ横斷面; 中軸ハ尙ホ存ス, $\frac{140}{1}$.—6: 太キ枝ノ表面, $\frac{390}{1}$.—7: 枝ノ縦斷面, 中軸ヲ示ス, $\frac{220}{1}$.—8: 第 CXXXII 圖版 4 圖ニ示シタル根ノ部, $\frac{390}{1}$.—9: 單一胞子 (0.015-0.02 μ), $\frac{600}{1}$.—10: 胞子ノ將ニ萌發セントスルモノ, $\frac{600}{1}$.—11: 幼キ前苗體, $\frac{340}{1}$.—12: 少シク發育セル前苗體ニシテ6個ノ直立スル枝ヲ有スルモノ, $\frac{220}{1}$.—13: おほいともノ葉ノ上ナル前苗體ノ縦斷面; *a, b*: 二個ノ幼キ體, $\frac{220}{1}$.

Brachytrichia Quoyi (C. Ag.) Born. et Flah.

Nom. Jap.: *Ai-midori*.

PL. CXXXIII, Fig. 14-17.

Brachytrichia Quoyi (C. Ag.) Born. et Flah. Revis. d. Nost. heterocyst. in Ann. de Sc. Nat. 1886, p. 373; Gomont Myxophyceae hormog. p. 126 in Schmidt's Flora of Kohchang, 1901; Kirchner in Engl. et Prantl natürl. Pflanzenf. I, 1. p. 90; De Toni Syll. Alg. V, p. 680; Okam. Alg. Jap. Exsic. No. 100.—*Brachytrichia rivulariaeformis* Zanard. Phyc. indic. p. 24, t. X, A f. 1-4. (after De Toni).—*Hormactis Quoyi* Born. in Farlow Mar. Alg. New-

Engl. p. 39.—*Hormactis Farlowi* Born. in Farlow, Anderson et Eaton Alg. Exs. Am. Bor. No. 45.

Fronds depresso-globular, sac-like, 5 mm. to 5 cm. or more in diameter, plicato-expanding and bullated, often becoming confluent, of dark-bluish green or violet color and almost leathery substance.

Hab.: On rocks and stones near high tide in warmer parts; Taiwan, Ryukyu, Amakusa Isl., Nomo, Prov. Kii, Toyohama (Prov. Owari), Cape Iwai (Prov. Rikuzen), Provs. Iwami and Yechigo.

PL. CXXXIII, Fig. 14-17. Fig. **14**: fronds of *Brachytrichia Quoyi* (C. Ag.) Born. et Flah. in nat. state and size.—Fig. **15**: cross-section of a frond, $\frac{1}{1}$.—Fig. **16**: portion of the fig. 15 magd., $\frac{390}{1}$.—Fig. **17**: one of filaments detached, $\frac{600}{1}$.

Brachytrichia Zanard. 1872.

あるみどり屬.

RIVULARIACEAE (MYXOPHYCEAE).

リブラリア科 (藍藻類).

體ハ始メ實質、後中空、Nostoc (念珠藻)ニ類シタル絲狀體ヨリ成リテ密ニ粘質ノ中ニ集ル。絲ハ屈折シ、彎曲シ、互ニ並行シ、分岐シ、上方ニ細ク成リ、遂ニ細キ毛トナル。假枝(真正ノ細胞分裂ニ依テスル分岐ニアラザルモノ)ハ時ニScytonema狀ニ二個出ルコトアリ、又時ニ基部ハ二個ニシテ上方ニハ單狀トナルコトアリ。鞘(細胞列ヲ蔽ヘル膜)ハ幼者ニアリテハ明ニ筒狀ヲナシ、後互ニ合—シテ不明トナル。異質細胞ハ介生的ニシテ一定ノ規則ナク存ス。

暖海ノ産ニシテ3種アリ,内二種ハ本邦暖海ニ産ス。——屬ノ名ハ brachys (短キ) ト thrix (毛) トヨリ成ル。和名ハ體ノ色ニ探レリ。

Brachytrichia Quoyi (C. Ag.) Born. et Flah.

あるみどり 岡村稱。海雹菜(臺灣)。

第 CXXXIII 圖版, 14-17 圖。

體ハ扁キ球狀ノ囊ニシテ, 5 mm. ヨリ 5 cm. 餘ノ直徑ヲ有シ, 皺多ク, 表面凹凸シ, 往々數個互ニ癒着ス。色ハ暗藍綠又ハ暗藍青ニシテ革質, 強韌, 乾燥スル時ハ僅ニ紙ニ附着ス。

產地: 暖海ニ産シ高潮線附近ノ岩石上ニ在リ。臺灣, 琉球, 天草島, 野母, 紀伊, 豐濱(尾張), 磐井岬(陸前); 濱田(石見) 及越後。北方ニハ漸ク小ニシテ小豆大トナル。

分布: 米國大西洋沿岸及カリフォルニア; 太平洋, (マリアナ群島, ボルネヲ); 印度洋, (セイロン, マスカレン島, コーチャン)。

臺灣ニテハ採リテ食用トシ清國人多ク用フ。

第 CXXXIII 圖版, 14-17 圖。14: *Brachytrichia Quoyi* (C. Ag.) Born. et Flah., あるみどり, ノ體ノ自然ノ狀, $\frac{1}{1}$ 。—15: 體ノ横斷面, $\frac{10}{1}$ 。—16: 15 圖ノ一部, $\frac{300}{1}$ 。—17: 絲狀體ノ一個, $\frac{600}{1}$ 。



Codium adhærens (Cabr.) C. Ag.

Nom. Jap.: *Hai-miru*.

PL. CXXXIV, Fig. 1-3.

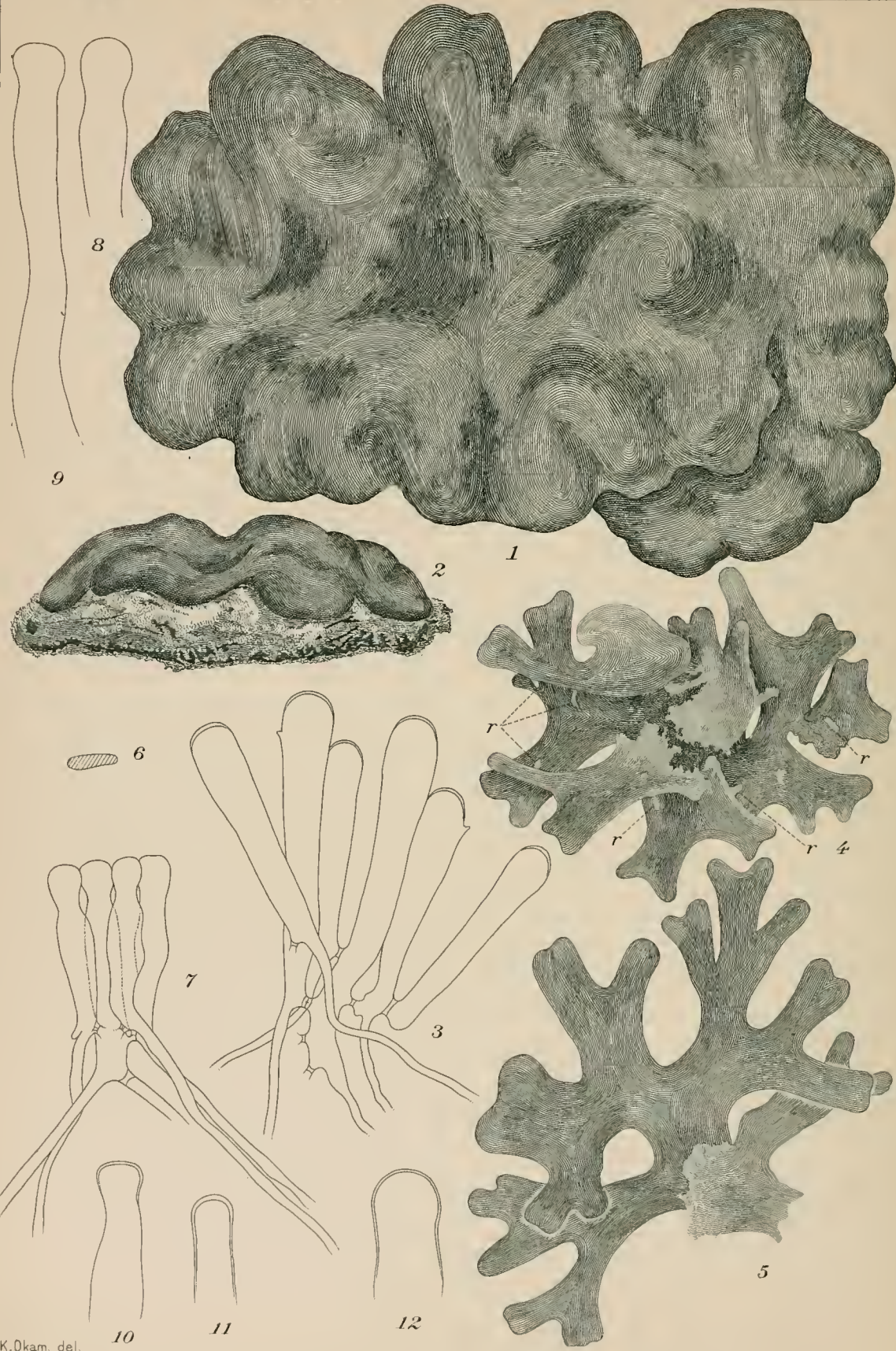
Codium adhærens (Cabr.) C. Ag.; Harv. Phyc. Brit. t. 35 A; De Toni Syll. Alg. I, p. 489; Kütz. Sp. p. 502; Id. Tab. Phyc. VI, t. 100, f. I.; J. Ag. Till Alg. Syst. VIII, p. 37; Hauck Meeresalg. p. 479; Ardiss. Phyc. Medit. II, p. 169; Okam. Alg. Jap. Exsic. n. 97.—*C. arabicum* Kuetz. Tab. Phyc. VI, t. 100, f. 2.

Fronds flat, irregularly expanding by the peripheral growth with roundish lobes, firmly adhering to substratum by the under-surface and sinuato-flexuose on the upper side, often becoming confluent. *Colour* deep blackish-green.

Utriculi are clavate and elongato-subcylindrical below, 8-10 times as long as diameter and a little thickened at the top. Utriculi branch near their bases close to each other and from this mode of branching of cortical utriculi it may be inferred that the frond does not much grow in thickness. Fronds when detached from the substratum strongly curves toward the undersurface.

Hab.: On rocks near low tide. Ryukyu, Ogasawara-Isl., Kyushyu; Provs. Totomi, Sagami, Boshyu and Rikuzen.

PL. CXXXIV, Fig. 1-3. Fig. 1: surface view of the frond of *Codium adhaerens* (Cabr.) C. Ag., in nat. state and size.—Fig. 2: lateral view, $\frac{1}{4}$.—Fig. 3: mode of branching of utriculi, $\frac{54}{1}$.



Codium adhaerens (Cabr.) C.Ag. はひみる Fig.1-3.
Codium coarctatum Okam. n.sp. ねざしみる Fig. 4-12.

Codium adhærens (Cabr.) C. Ag.

は ひ み る.

第 CXXXIV 圖版, 1-3 圖.

體ハ扁平ニシテ, 縁邊成長ニヨリテ不規則ニ展ガリ, 圓形ノ裂片ヲ有シ, 裏面ヲ以テ堅ク他物ニ固着シ, 表面ハウチウチト皺又ハ襞ヲナシ, 往々數個相癒着ス. 色ハ暗綠色ニシテ殆ド青黒シ. 胞囊ハ棍棒狀ニシテ下部長ク稍圓柱狀, 長サハ太サノ 8-10 倍ニシテ頂端少シク増厚ス. 胞囊ハ其下部ニ近ク互ニ相接シテ分岐ス, 之ガ爲ニ體ハ甚シク肥厚セザルコトヲ見ルベシ. 體ヲ他物ヨリ剝離スルトキハ其裏面ノ方ニ強ク屈曲スル性アリ.

產地: 低潮線附近ノ岩ニ在リ. 琉球, 小笠原島, 九州ヨリ東海道沿岸ヲ經テ陸前磐井岬ニ至ル.

分布: 太西洋兩岸, 地中海, アドリ海, 印度洋, 紅海, 太平洋諸島.

第 CXXXIV 圖版, 1-3 圖. 1: はひみる, *Codium adhaerens* (Cabr.) C. Ag. ノ表面, $\frac{1}{1}$.—2: 側面ヨリ見タルモノ, $\frac{1}{1}$.—3: 胞囊ノ分岐スル狀, $\frac{54}{1}$.

Codium coarctatum Okam. sp. nov.

Nom Jap.: *Nezashi-miru*.

PL. CXXXIV, Fig. 4-12.

Diagn.: *Fronde* a little stiff, decumbent, compressed, broadly ilnear, irregularly dichotomous with obtuse, truncated or bifid apices

and roundish axils, attaching to each other and to the substratum by emitting root-tufts from the undersurfaces, of deep greenish colour. Utriculi almost cylindrical, subtruncated at apex and slightly narrowed a little beneath the top, 50-66 μ broad, about 366 μ long, 5-6 times as long as broad; utriculi of the undersurface having a very thin wall at the top, those of the upper side a little thickened and those standing at the corner or margin thicker than those of the upper.

Hab.: On rocks below low tide. Provs. Boshyu and Sagami.

Descrip.: *Fronde* decumbent measuring some 10 cm. or more in extension, with broader segments, 5-10 mm. or more in breadth, 3-4 mm. thick, which are parted with a patent axil, closely coalesced to each other by short tufts of root filaments emitted from the under-surfaces of segments, with glabrous surfaces on both sides. Utriculi are generally slightly constricted a little beneath the apex. This character, however, is not strictly followed; for, in one and the same frond some are not constricted; but subtruncated character is almost uniform. Utriculi branch near their bases close to each other after the manner of *Codium adhaerens* so as to form a dense compact layer and to extend side by side rather than to increase in thickness. Utriculi of both upper and lower surfaces are not much different in the thickness of the terminal wall, but strictly speaking those of the upper side is a little thicker than those on the lower; those standing at the corner or margin of frond have a thick wall at top, but not too much thickened like crescent. *Colour* deep green. *Substance* rather firm becoming somewhat coriaceous when dried and the plant does not adhere to paper in drying.

The present plant shows on the one hand a close affinity with *Codium intricatum* Okam. (p. 74, Pl. CXX fig. 9-13) and on the other some relations with *C. dimorphum* Sved. With the former it has the following characters in common, viz.: dichotomous, compressed and decumbent habit, characters of emitting tufts of root-fibres and shape of utriculi; but it differs in the substance and colour of frond, as well as in the size and apical thickness of utriculi. The substance of *C. intricatum* Okam. is more soft, the plant firmly adhering to paper in drying. The intrication of parts is more dense, and colour is light greenish. Moreover, the breadth of utriculi is broader than the present plant and they do not present any difference in every part in the thickness of apical wall. With *C. dimorphum*, in the next place, the plant in question shows some similarity in having thickened wall of utriculi differing according to their positions; but the thickness is thinner in ours than in that plant. Of the difference of shape of frond between two plants it is so evident that there is no need to relate much of it. Indeed, the new species stands near *C. intricatum* Okam. under the Agardh's group of *Codia elongatae*.

PL. CXXXIV, Fig. 4-12. Fig. 4: fronds of *Codium coarctatum* Okam. sp. nov. viewed from the undersurface; *r, r*, root tufts, $\frac{1}{1}$.—Fig. 5: another frond seen from the upper surface, $\frac{1}{1}$.—Fig. 6: cross-section of a branch, $\frac{1}{1}$.—Fig. 7: cortical utriculi, 366 μ long by 50-66 μ , $\frac{80}{1}$.—Fig. 8-9: utriculi not much narrowed beneath the apices, $\frac{91}{1}$.—Fig. 10: utriculus of the upper surface, $\frac{91}{1}$.—Fig. 11: utriculus at margin, $\frac{91}{1}$.—Fig. 12: utriculus of the undersurface, $\frac{91}{1}$.

Codium coarctatum Okam. 新種.

ねざしみる 岡村稱.

第 CXXXIV 圖版, 4-12 圖.

性質: 體ハ少シク硬ク, 平臥シ, 扁壓, 廣キ線狀ニシテ, 不規則ニ叉狀ニ分岐シ, 枝端鈍圓, 截形又ハ二裂シ, 腋圓ク, 各部ノ裏面ノ所々ヨリ根毛ノ束ヲ出シテ相互ニ附着シ又他物ニ附着ス, 濃綠色ナリ. 胞囊ハ殆ド圓柱狀, 頂端稍截形ヲナシ頂部ノ少シク下ノ所ニテ少シククビレ, $50-66\mu$ 太ク, 約 366μ 長ク, 幅 15-6 倍長シ; 裏面ノ胞囊ハ頂端ノ膜甚ダ薄ク, 表面ノモノハ少シク厚ク, 縁邊ノモノハ表面ノモノヨリモ厚シ.

產地: 低潮線附近ノ岩上ニ在リ. 根本(房), 江ノ島(相).

記載: 體ハ平臥シ, 10 cm. 若クハ夫以上ニシテ枝ハ幅 5-10 mm. ヲ有シ, 3-4 mm. 厚ク, 腋廣ク, 各部ノ裏面ノ所々ヨリ短キ根毛ノ束ヲ出シテ互ニ接着シ, 表裏兩面トモ平滑ナリ. 胞囊ハ一般ニ頂端ノ少シク下ノ所ニテ輕ククビレタリ; 但シ, 此性質ハ常ニ必ズシモ然ラザルモノアリ, 蓋シ同一ノ體ニ於テモ中ニハクビレザルモノアレバナリ; 然レドモ其頂端ノ截形ナルコトハ殆ド一様ナリ. 胞囊ハ其基部ニ近ク互ニ相接近シテ分岐スルコト猶ハひみるノ如シ, 之ガ爲ニ組織ハ緻密ニシテ枝ハ厚サヲ増スヨリモ其幅ヲ大ニスル方ニ專ナリ. 表裏兩面ノ胞囊ハ頂端ノ厚サ大差ナシト雖モ精密ニ云ヘバ表面ノモノハ裏面ノモノヨリ少シク厚ク, 枝ノ隅即チ縁邊ノモノハ最モ厚シトス, 然レドモ三日月狀ノ如クナル程厚カラズ. 色ハ綠色ニシテ濃シ. 質ハ稍硬ク乾燥スルトキハ角ノ如クナリ, 紙ニ附着セズ.

類縁： 本植物ハ一方ニハ *C. intricatum* Okam. (74-77 頁第 CXX 圖版 9-13 圖) ト親縁ヲ有シ、他方ニハ *C. dimorphum* Sved. ト或類縁ヲ有ス。前者トハ實ニ下ノ性質ヲ以テ相似タリ；即チ叉狀、扁壓ニシテ平臥スル性質、根毛ノ束ヲ出スコト及胞囊ノ形狀是ナリ；然レドモ體質及色ト胞囊ノ大サ及頂端ノ厚サトヲ異ニス。 *C. intricatum* ノ體質ハ本種ヨリモ軟ク、體ハ乾燥スルトキハ密ニ紙ニ附着ス；又各部ハ密ニ錯綜シ色ハ淡ク綠色ナリ。加之、胞囊ノ幅ハ本種ノモノヨリモ太クシテ胞囊ハ各部トモ頂端ノ厚サニ於テ些ノ區別ヲ存スルコトナシ。次ニ、 *C. dimorphum* トハ部分ニ從テ胞囊ノ頂端ノ壁ノ厚サヲ異ニスル點ニ於テ類似スト雖モ、其厚サハ本種ニアリテハ該種ホド厚カラズ。此兩者ノ體ノ形狀ノ差ハ多言ヲ要セズシテ明ナリ。實ニ本植物ハ *C. intricatum* Okam. ニ近縁ヲ有スルモノニシテ *Codia elongatae* ニ屬スベキモノトス。

第 CXXXIV 圖版, 4-12 圖. 4: ねざしみる, *Codium coarctatum* Okam. 新種ノ體ヲ裏面ヨリ見タルモノ; r, r , 根ノ束, $\frac{1}{1}$ —5: 他ノ體ヲ表面ヨリ見タルモノ, $\frac{1}{1}$ —6: 枝ノ横斷面, $\frac{1}{1}$ —7: 胞囊, 長サ 366μ , 幅 $50-66\mu$, $\frac{80}{1}$ —8-9: 頂端下ノ甚シククビレザル胞囊, $\frac{91}{1}$ —10: 表面ノ胞囊; 11: 隅即チ縁邊ノモノ; 12: 裏面ノモノ; $\frac{91}{1}$.

Codium saccatum Okam. sp. nov.

Nom. Jap.: *Fukuro-miru*.

PL. CXXXV, Fig. 1-5.

Diagn.: *Fronds* depresso-globular, hollow, sac-like, 5-7 cm. in diameter, thin, membranaceous, soft, light green. *Utriculi* short,

oblongo-cylindrical, a little swollen laterally at apex, ca. 3 times as long as broad, with thin wall.

Hab.: On rocks at the depths of 4 fath. Futaye (Amakusa Isl.).

Descrip.: *Fronds* mostly depresso-globular, sac-like, attached to the substratum at a basal umbilicated point by hyphoid filaments, thin, ca. 0.4 mm. thick. Utriculi short, oblong or sub-cylindrical, a little expanded laterally and rounded at apex, 0.25–0.28 mm. by 0.08–0.1 mm. and the breadth of the top measures 0.1–0.14 mm. that is ca. 3 times as long as broad and not thickened at top. They branch near their bases close to each other or at some distances; they do not form a compact layer but rather loose. *Colour* light or yellowish green. *Substance* thin and membranaceous and the plant imperfectly adheres to paper in drying.

A distinct species among the group of *Codia Bursae*. As far as it is known to the writer there are two species which has hollow globular frond viz. *Codium Bursae* (L.) Ag. and *C. ovale* Zanard., both of which are very different from the present species.

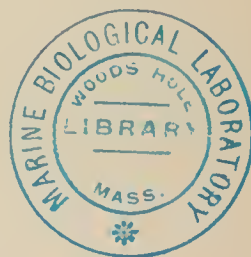
PL. CXXXV, Fig. 1–5. Fig. 1: frond of *Codium saccatum* Okam. n. sp. in nat. state and size.—Fig. 2: cortical utriculi (ca. 0.4 mm. thick), $\frac{21}{1}$.—Fig. 3: mode of branching of utriculi, $\frac{21}{1}$.—Fig. 4: utriculus, 0.25 × 0.1 mm. and at top 0.14 mm. broad.—Fig. 5: another one, 0.28 × 0.08 mm. and 0.1 mm. broad at top.

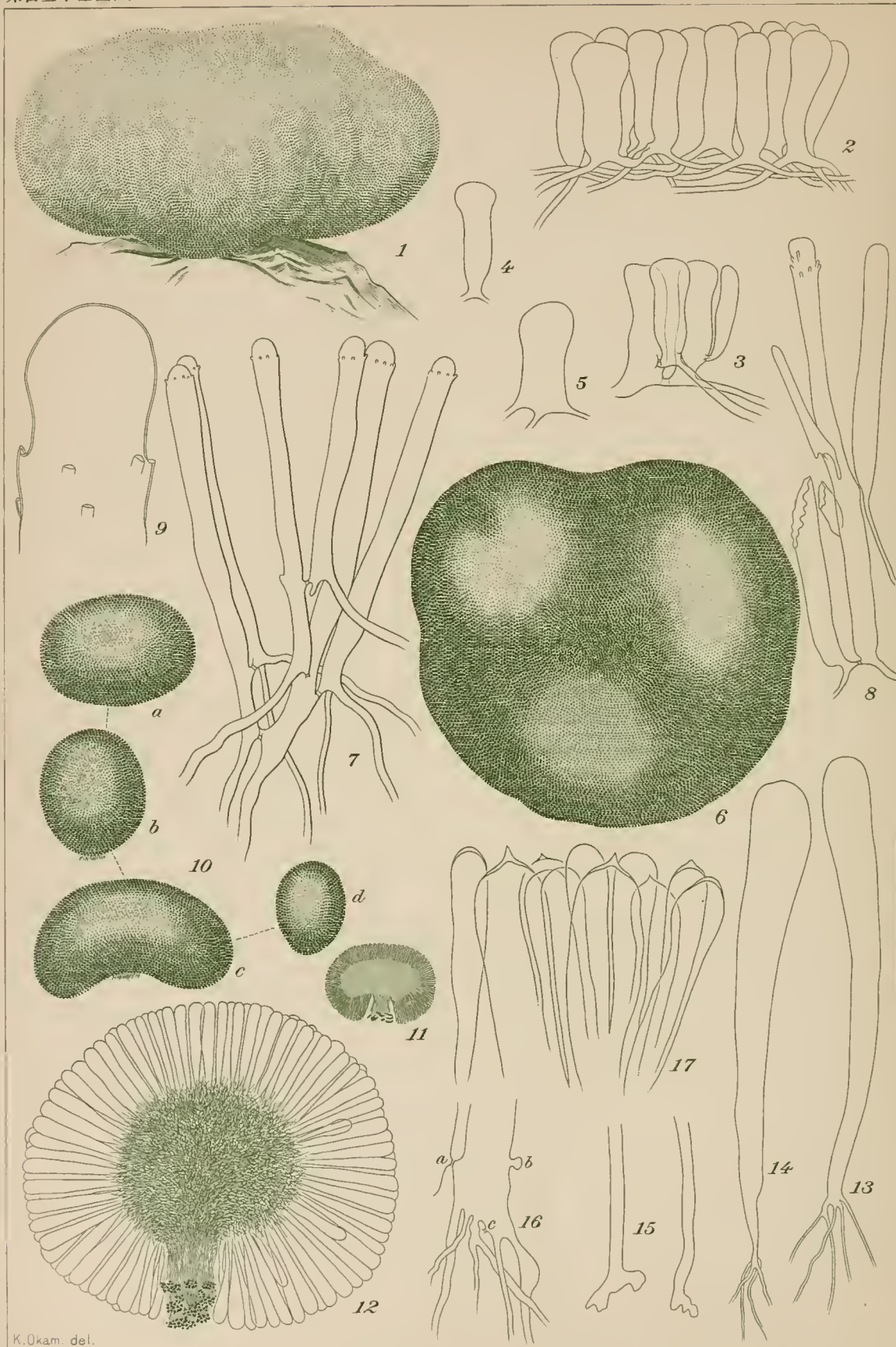
Codium saccatum Okam. 新種.

ふくろみる 岡村 稱

第 CXXXV 圖版, 1–5 圖.

性質: 體ハ扁キ球狀ニシテ, 中空, 囊ノ如ク, 直徑 5–7 cm. ニ





K. Okam. del.

Codium saccatum Okam. n.sp. ふくろみる Fig. 1-5.

Codium pugniformis Okam. n.sp. こぶしみる Fig. 6-9.

Codium mamillosum Harv. だまみる Fig. 10-16.

Codium divaricatum Holm. (non Gepp) f. *hybrida* Okam. Fig. 17.

シテ、薄キ膜質ヲナシ、軟ク、淡綠色ナリ。胞囊ハ短ク、長橢圓—圓柱狀；頂端少ク横ニ膨レ、太サノ約三倍長シ、膜薄シ。

產地：天草島二江ノ沖、合津ノ海底 4-5 尋ノ岩石ニ生ズ。

記載：體ハ概テ球狀ニシテ扁ク、囊狀、下部臍ノ如クナリタル所ヨリ毛狀根ヲ出シテ岩ニ附着シ、薄ク、厚サ約 0.4 mm. ナリ。胞囊ハ短ク、長橢圓形若クハ稍圓柱狀ニシテ頂端横ニ少シク擴ガリ且圓ク、長サ 0.25-0.28 mm. 幅 0.08-0.1 mm. ニシテ頂端ノ幅ハ 0.1-0.14 mm. アリ、長サハ幅ノ約3倍ニシテ頂端ノ膜ハ厚カラズ。胞囊ハ基部ニ近ク互ニ相接近シテ分岐シ又ハ離レテ分岐ス、而シテ密ナル層ヲ造ラズシテ稍緩シ。色ハ淡綠又ハ黃綠色ナリ。質ハ薄キ膜狀ニシテ乾燥スルトキハ紙ニ附着ス。

Codia Bursae ノ部ニ入ルベキ新種ナリ。予ノ知ル處ニテハ中空球狀ノ體ヲ有スルモノハ只二種アルノミ即チ Codium Bursae (L.) Ag. ト C. ovale Zanard. 是ナリ；此兩種トモ本種ト全ク同ジカラズ。

第 CXXXV 圖版, 1-5 圖。1: ふくろみる, Codium saccatum Okam., 新種, ノ體, $\frac{1}{1}$.—2-3: 胞囊分岐ノ狀, $\frac{91}{1}$.—Fig. 4-5: 胞囊ノ一ヲ示ス；4: 長サ 0.25 mm. 幅 0.1 mm., 頂部ノ幅 0.14 mm.；5: 長サ 0.28 mm., 幅 0.08 mm., 頂部ノ幅 0.1 mm. ナリ；凡テ $\frac{91}{1}$.

Codium pugniformis Okam. sp. nov. prov.

Nom. Jap.: *Kobushi-miru*.

PL. CXXXV, Fig. 6-9.

Diagn.: Fronds globular or ovoid or obovoid when young or irregularly protuberant, becoming more and more irregularly bulg-

ing out or variously sinuated when old, attaining the size of 7-9 cm. in breadth, attached to the substratum by fine filaments emitted from more or less broader patches on the undersurface, solid, very elastic and somewhat firm; utriculi slender and cylindrical with a thin-walled roundish top, ca. 2 mm. long, in aver. 188 μ broad, 7-10 times as long as broad; surface of the frond glabrous and velvety and the substance firm and gelatinous.

Hab.: At the depth of 2-3 fathoms. Provs. Hyuga, Satsuma and Hizen, Amakusa Isl., C. Shiwo (Prov. Kii), Prov. Shima.

Descrip.: *Fronde* globular, ovoid or obovoid when young, 2-3 cm. in diam., or irregularly protubelant from the beginning; as they grow in size, some become uniform below, some extend more or less laterally or more and more becoming irregularly protuberating or variously sinuated or tuberos, attaining the size of 7-9 cm. in height and breadth. Fronds seem to grow on gravels stones, corallines etc. by emitting root-filaments either from one spot of the undersurface or from several flecks and as they increase in size, rooting flecks are increased in number. On cutting the frond into two, the peripheral portion incurves with a strong force. Frond is not hollow within, but solid, the inner cavity being densely filled up with hyphoid filaments running downward from cortical utriculi and with abundant mucilaginous mass. Utriculi are slender cylindrical with a thin-walled globular top, ca. 2 mm. long with an average breadth of 188 μ and 7-10 times as long as broad. They branch in the midway or a little below; and from this mode of ramification it may be inferred that the frond grows in size on all sides. The surface of frond is velvety and the substance is firm and compact, very gelatinous to touch and the plant firmly adheres to paper in drying. *Colour* herbaceous green with shining lustre in drying.

Among our plants the present alga is related to *Codium mamillosum* Harv. in shape, but from which it differs in size and irregularly protuberant shape of frond as well as in the form and size of utriculi. *Codium pomoides* J. Ag. (Anal. Alg. Cont. I, p. 100) which seems to me probably to have been known only in young stages seems to resemble very much to the present plant, especially in its very elastic habit and long cylindrical "aciculaeform" utriculi. But shape of the frond of that species is said to be regularly globular and the length of utriculi which are slightly constricted beneath the apex, unlike in ours, is much longer than the plant in question ("decies aut fere usque vicesies longioribus"). Of their breadth nothing is mentioned. Thus on the ground that the present plant differs much from *C. mamillosum* and somewhat from *C. pomoides* I establish the present plant as a provisionally new species.

PL. CXXXV, Fig. 6-9. Fig. 6: frond of *Codium pugniformis* Okam. n. sp. prov., $\frac{1}{1}$.—Fig. 7-8: mode of branching of utriculi (ca. 2 mm. long), $\frac{22}{1}$.—Fig. 9: apex of an utriculus showing thin walled apex and scars left after dropping of colorless hairs, $\frac{140}{1}$.

Codium pugniformis Okam. 假新種.

こぶしみる 岡村 稱.

第 CXXXV 圖版, 6-9 圖.

性質: 體ハ初メ球狀, 卵形又ハ倒卵形若クハ不規則ニ凹凸シ, 漸ク長ズルニ随テ益々不規則ニ隆起部ヲ生ジ幅 7-9 cm. ニ達シ, 裏面ノ多少廣キ部面ヨリ細キ絲ヲ出シテ他物ニ附着シ, 實質ニシテ, 甚シク彈力ヲ有シ, 稍固シ; 胞囊ハ細キ圓柱狀

ニシテ頂端圓ク、膜薄ク、約 2 mm. 長ク、平均 188 μ 太ク、太サノ 7-10 倍長シ；體ノ表面ハ絨毛ノ如クシテ滑ニ、質ハ固クシテ粘性ナリ。

產地：2-3 尋ノ深所ニ在リ(濱島)、島ノ浦(日向)、坊岬(薩)、肥前、二江(天草島)、潮ノ岬(紀)、濱島(志)。

記載：體ハ初メ球狀、卵形又ハ倒卵形、直徑 2-3 cm. アリ、或ハ始メヨリ不規則ニ隆起ス；其漸ク大ナルニ至レバ或物ハ下部腎臟形ト成リ、或物ハ多少横ニ展ガリ或ハ益々不規則ニ凹凸シ又ハ塊瘤狀ヲナシ高サ幅サトモ 7-9 cm ニ達ス。此植物ハ小石、石、石灰藻類等ニ附着スルモノ、如ク、裏面ノ一點ヨリ若クハ許多ノ場所ヨリ毛根ヲ出シテ附着ス、其長大ナルニ從テ根ヲ出ス部班ハ其數ヲ増ス。體ヲ二ツニ切ルトキハ強キ力ヲ以テ内部ノ方ニ屈曲ス。體ハ中空ナラズシテ實質ナリ、其内部ハ皮部ノ胞囊ヨリ出ル絲ト多量ノ粘質トヲ以テ充タサル。胞囊ハ細キ圓柱狀ニシテ頂端圓ク、膜薄ク、約、2 mm. 長ク、太サ平均 188 μ ニシテ幅ノ 7-10 倍長シ。胞囊ハ其中半部若クハ少シク下部ヨリ分枝ス；此分枝法ヲ以テ見ルモ體ハ各方面ニ成長スルコトヲ知ル。體ノ表面ハ絨毛ノ如ク、質ハ固クシテ緻密ニ、之ニ觸ル、トキハ甚シク粘性ニシテ乾燥スルトキハ密ニ紙ニ附着ス。色ハ草色ニシテ乾燥スルトキハ光澤アリ。

類縁：本邦所産ノみる屬中ニテハ本植物ハ其形狀 *C. mammosum* Harv., たまみる, ニ類ス；然レドモ體ノ大サト不規則ニ隆起セル形狀ト並ニ胞囊ノ大サ及形狀トハ全ク之ト異ナレリ。*Codium pomoides* J. Ag. ハ十中八九只幼者ノミニ就テ知ラレタルモノ、如ク見ユレドモ該植物ハ本種ト甚シク類似シ、殊ニ其著シク彈力ニ富ムコト、其胞囊ノ長ク圓柱狀ニシテ“松

葉狀”ナルトハ兩者ノ類似スル點ナリトス。然レドモ該植物ノ體ハ正シキ球狀ナリト稱セラレ、胞囊ノ長サハ本種ヨリハ遙ニ長シ而シテ胞囊ノ頂端ノ下ノ少シククビレタルコトハ本種ト異ナル所ナリ (J. Agardh ハ該種ノ胞囊ノ長サヲ幅ノ10 倍又ハ略ボ 20 倍ト記ス)。其太サニ就テハ記サレタル所アラズ。以上論ズル如ク、本植物ハ *C. mamillosum* ト甚シク異ナリ、*C. pomoides* ト幾分異ナルヲ以テ予ハ假ニ之ヲ新種トス。

第 CXXXV 圖版, 6-9 圖. 6: *Codium pugniformis* Okam., 假新種, ノ體, $\frac{1}{1}$.—7-8: 胞囊ノ分岐スル狀(約 2 mm. 長シ), $\frac{22}{1}$.—9: 胞囊ノ頂端ニシテ膜薄ク、無色ノ毛ノ落ちタル痕ヲ示ス, $\frac{140}{1}$.

Codium mamillosum Harv.

Nom. Jap.: *Tama-miru*.

PL. CXXXV, Fig. 10-16.

Codium mamillosum Harv. Phyc. Austr. t. 41; J. Ag. Till Alg. Syst. VIII, p. 39; De Toni Syll. Alg. I, p. 491; Okam. in Matsumura and Miyoshi Crypt. Jap. Icon. illust. Pl. XXX; Okam. Alg. Jap. Exsic. No. 49.

Fronds small, globular, oval, obovoid, depresso-globular, transversely oblong or oblongo-reniform etc., 1-2 cm. in size, attached to the substratum by fine filaments which do not much elongate beyond the undersurface. On cutting the frond into two, peripheral portion does not curve inward. Fronds solid and the inner cavity is densely packed with hyphoid filaments running from utriculi.

Utriculi are club-shaped and elongated, gradually tapering below, subtruncato-roundish and thin-walled at apex, ca. 3-4 mm. long, 540 μ broad in average (mostly 564 μ broad), 8-9 times as long as broad. Utriculi branch near their bases close to each other. They are distinctly visible to the naked eyes. Colour herbaceous green. Substance is not gelatinous and the plant which has no lustre when dried does not adhere to paper in drying.

Hab.: On rocks below low tide. Provs. Hyuga, Higo, Shima, Suruga, Idzu, Sagami, Boshyu.

Setchell and Gardner (Alg. of Northwest. America p. 232) remarks that *C. mamillosum* Harv. distributed in my Alg. Jap. Exsic. No. 49 seems to be *C. Ritteri* Set. et Gard.; but that plant differs from the present plant by having a distinct stipe and also in the shape of utriculi.

PL. CXXXV, Fig. 10-16. Fig. 10, *a-d*: different forms of fronds of *Codium mamillosum* Harv. in nat. size.—Fig. 11: frond cut into two, $\frac{1}{2}$.—Fig. 12: vertical section of another frond, $\frac{3}{4}$.—Fig. 13: utriculus (3.6 mm. long, 420 μ broad) $\frac{1}{1}$.—Fig. 14: another one, 8 times as long as broad, $\frac{2}{1}$.—Fig. 15: rooting ends of filaments, $\frac{4}{1}$.—Fig. 16: lower portion of an utriculus; *a*, connecting point of an utriculus branched from the original one; *b*, a young utriculus; *c*, connecting point with the preceeding utriculus (not represented in the fig.), $\frac{4}{1}$.

Codium mamillosum Harv.

た ま み る.

第 CXXXV 圖版, 10-16 圖.

體ハ小ニシテ球狀, 卵形, 倒卵形, 扁キ球狀, 横ニ俵狀又ハ俵狀ニシテ腎臟形等種々ノ形狀ヲナシ, 1-2 cm. ノ大サニシテ毛

狀根ヲ以テ他物ニ附着シ、其根ハ體ノ裏面ヨリ長ク伸出ルコトナシ。體ヲ切斷スルモ、外縁ノ内方ニ屈曲スルコトナシ。體ハ實質ニシテ内部ハ胞囊ヨリ出ル所ノ絲ヲ以テ密ニ充タサル。胞囊ハ棍棒狀ニシテ長ク、下部ノ方ニ漸次細ク、頂端稍截形ニシテ圓ク、膜薄ク、約 3-4 mm. 長ク、平均ノ太サ 540μ (多クハ 564μ 太シ) ニシテ、太サノ 8-9 倍長シ。胞囊ハ基部ニ近ク分岐シ互ニ相接ス。胞囊ハ肉眼ニテ明ニ見ルベキ程大ナリ。色ハ草色。質ハ粘性ナラズシテ體ハ乾燥スルトキハ紙ニ附着シ光澤ナシ。

產地：低潮線以下ノ岩石ニ附着ス。島ノ浦(日)、天草島、濱島(志)、江ノ浦(駿)、伊豆、江ノ島(相)、根本(房)。

分布：ニウホルランド。

Setchell 及 Gardner 氏ハ氏ノ Alg. of North west. America 232 頁ニ予ノ日本海藻標品 49 號ヲ以テ頒布シタル *C. mamillosum* ハ氏ノ新種 *C. Ritteri* ナラズヤト、ノ疑ヲ插ミタレドモ本種ハ柄ヲ有セザルコト、胞囊ノ形狀トヲ以テ該種ト異ナリトス。

第 CXXXV 圖版, 10-16 圖. 10, *a-d*: たまみる, *Codium mamillosum* Harv., ノ種々ノ形狀, $\frac{1}{1}$.—11: 縱斷面, $\frac{1}{1}$.—12: 同上, $\frac{3}{1}$.—13: 胞囊 (3.6 mm. 長ク, 420μ 太シ), $\frac{15}{1}$.—14: 他ノモノ, 幅ノ 8 倍長シ, $\frac{22}{1}$.—15: 根毛ノ附着部, $\frac{42}{1}$.—16: 胞囊ノ下部; *a*, 圖ニ向テ左ノ胞囊ヲ分岐シタル連絡點; *b*, 新ニ作ラレタル幼キ胞囊; *c*, 他ノ胞囊圖ニハ示サレザル)ヨリ本胞囊ノ分レ出タル連絡點, $\frac{42}{1}$.

CORRIGENDA.

In Vol. III. No. II, p. 33-36, Pl. CVIII, fig. 9-CIX, I have described **Dictyota marginata** Okam. nov. sp.; but it must be corrected for *Dilophus* owing to the structure of the inner layer of frond, and this plant is to be called

Dilophus marginatus (non J. Ag.) Okam.

Of the difference of this plant and *Dilphus marginatus* J. Ag. I can not state anything unless I could study our plant by comparing with that plant of that author.

正 誤

第四集 73 頁二行もつれみるハさきぶとみるノ誤.

第六集 113 頁ひじきノ部ニ九州ニテハ主軸ノミヲ用井トシタルハ對洲ノ誤ニシテ熊本,福岡等ニテハ枝小枝トモニ食スト云フ.

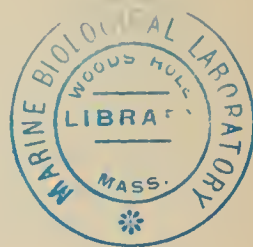
本卷第二集, 33-36 頁, 第 CVIII 圖版, 9 圖—CIX 圖版ニ予ハ **Dictyota marginata** Okam., 新種, ふくりんあみち, ヲ記載シタリ. 然レドモ此ハ **Dilophus marginatus** (non. J. Ag.) Okam. ト改メザルベカラズ; 其内層ノ細胞ノ數一層以上ナレバナリ.

J. Ag. ノ記載セル *Dilophus marginatus* J. Ag. ト予ノ同學名ノモノトハ如何ニ異ナルカハ其標本ヲ比較研究スルニアラザレバ今知ル能ハズ.

NOTICE.

[The description of **Codium divaricatum** Holm. (non Gepp) f. **hypbrida** Okam. PL, CXXXV, Fig. 17. will be given in the following number.]

(第 CXXXV 圖版, 17 圖ノ説明ハ次號ニ載スベシ).





Codium divaricatum Holm. くろみろ

Codium divaricatum Holm.

Nom. Jap.: *Kuro-miru*.

PL. CXXXVI.

Codium divaricatum Holm. New Mar. Alg. from Japan p. 250, Pl. VII, f. 2 *a, b* (not *C. divaricatum* Gepp Cod. of the Siboga Expedition p. 136, 145, f. 195-199 and not *C. divar.* Okam. Nippon-sorui-meii, 日本藻類名彙, p. 189).—*C. subtubulosum* Okam. sp. nov. mscr., Nippon-sorui-meii, 日本藻類名彙, p. 180.

The *frond* is regularly dichotomous, usually 29-30 cm. high, often attaining a height of 80-100 cm. in a well developed plant. Branches are more or less compressed often subcylindrical in upper segments as well as in stipital portion, patent, with round axils and are broadly expanded beneath forks into flat and cuneate segments where the breadth often measures 6-13 cm. The distances between forks are usually longer in the median portion of frond, gradually becoming shorter above and below often attaining 30 cm. or more in a well grown frond. Apical segments are divaricated or simply elongated gradually tapering upward into blunt apices. In some specimens very irregular ramifications are met with. *Utriculi* are as a rule cylindrical, in some slightly clavate or obovate, and generally somewhat truncated at apex with thin apical wall when young, but afterward becoming much thickened. They are 658-846 μ long and 6-8 times as long as broad. *Gametangia* are grown upon utriculi at about their middle portions or rather below, but not without those arising higher and measure 450 μ by 180 μ . *Colour* dark saturated green. *Substance* thick and

PL. CXXXV—CXL. May 1915.

tough and the plant firmly adheres to paper in drying; the frond strongly contracts taking a channelled appearance when dried.

Hab.: On rocks near low tide extending to deep tide. Kago-shima, Nagasaki, Hirado, Cape Nomo, Prov. Tosa and Iyo, Eno-shima (Sagami), Prov. Boshyu.

The specimen by which Holmes founded the present species is probably a young form and he measured the length of utriculi as only 3 times as long as broad. He took it as one of the characteristics distinguishing *C. divaricatum* from *C. elongatum*, but it is not so short as he mentioned.

The present plant has a very close resemblance with *Codium elongatum* Ag. in the external appearance. To me the difference between the two related plants seems to exist in the form of utriculi and their apical thickness. Utriculi of the present alga is cylindrical with subtruncate apex whose wall is more or less thickened and especially in older specimen or in older portion of a frond. The apical wall is much thickened as shown in PL. CXXXVI, fig. 3; while in *C. elongatum* they are obovato-clavate with round and thin-walled apices. I have not been able to ascertain the size of a fully grown frond of that species in the literature consulted, but in our plant it attains 90–100 cm. in length.

C. elongatum Ag. has been reported to occur in this country by early authors, such as Suringar, Kjellman etc. Amongst others Kjellman reports this alga to have obtained at Cape Nomo giving an illustration of an utriculus (Marina Chlorophy. från Jap. p. 35, Tab. 7, f. 4–5). In my specimen got from the same locality I find some of utriculi to be obovato-clavate somewhat resembling those of *C. elongatum*, but in the same frond cylindrical and

subtruncated utriculi predominate. To me, at the present knowledge, the existence of that species in this country seems to be somewhat doubtful, if Holmes' *C. divaricatum* is surely different from *C. elongatum* Ag. and not the same species. I do not doubt that my plant in question is *C. divaricatum*, though I have not seen his specimen.

The specimen (No. 25) which I sent to De Toni under the name of *C. elongatum* with the Japanese name "Naga-miru" is indeed the present species. The Japanese name given to that species is erroneous owing to the confused using for this plant and *C. cylindricum* Holm.

In my herbarium I have a specimen of *C. elongatum* Ag. from Brasil sent to me from Mr. Reinbold. In making study of this specimen in comparison with our plant I have found that the difference between the both plants exists in the form and apical thickness of utriculi. Is it not fact for *C. elongatum* Ag. that the dried frond is thin and soft owing to the thin-walled utriculi, while in *C. divaricatum* Holm. thickish and stiff on account of thickened apex of utriculi?

f. hybrida Okam. PL. CXXXV, fig. 17.

Utriculi partly mucronated and partly rounded at apex.

Statue of frond, colour and substance quite those of the *C. divaricatum* Holm., only differing in the form of utriculi which presents partly mucronated apex after the manner of *Codium mucronatum* and partly rounded and thickened as in the typical species, and in consequence the frond is partly rough to touch and partly smooth. Probably a hybrid form between *C. mucronatum* J. Ag. var. *Californicum* J. Ag. and *C. divaricatum* Holm.

Hab.: Katsuura (Prov. Kadzusa).

PL. CXXXV, fig. 17: portion of the cross section of frond of *Codium divaricatum* Holm. f. *hybrida* Okam., $\frac{5.4}{1}$.

PL. CXXXVI. Fig. 1: irregularly branched frond of *Codium divaricatum* (non Gepp) Holmes in nat. state and size.—Fig. 2: portion of a regularly dichotomous frond, $\frac{1}{1}$.—Fig. 3-7: different forms of utriculi; fig. 3, 4, 7: utriculi from the plant shown in fig. 1; fig. 5-6, from Enoshima; 3-6: $\frac{5.4}{1}$; 7: $\frac{9.1}{1}$; fig. 6 with a male gametangium.—Fig. 8: female gametes, highly magd., (Shirahama, Prov. Boshyu).

Codium divaricatum Holm.

く ろ み る.

第 CXXXVI 圖版.

體ハ正シク叉狀ニ分岐シ,概チ 20-30 cm. 高ク,充分成長シタルモノニテハ往々 80-100 cm. ニ達ス. 枝ハ多少扁圓又ハ扁壓ニシテ,上部ハ時ニ稍圓柱狀ヲナシ,基部亦然リ,腋圓ク廣開シ,分岐點ノ下部ハ甚シク扁平トナリテ開張シ楔形ヲナシ,幅往々 6-13 cm. アリ. 叉枝ハ體ノ中央部ニ長ク上下ニ稍短シ,其充分成長シタルモノニアリテハ往々 30 cm. 若クハ以上ニ達ス. 上部ノ枝ハ廣ク叉枝ニ開キ或ハ單ニ伸長シ,漸次上方ニ細クナリ,鈍頭ニ了ル;時ニ甚シク不規則ナル分岐ヲナスモノアリ. 胞囊ハ圓柱狀ナルヲ常トスレトモ,或標品ニテハ稍棍棒狀又ハ倒卵形ナルアリ,而シテ頂端概ネ稍截形ヲナシ,其幼キモノハ頂膜薄ケレドモ,後甚シク増厚ス;胞囊ノ長サハ 658-846 μ ニシテ太サノ 6-8 倍アリ. ガメート囊ハ胞囊ノ中央部若クハ其下ノ處ヨリ出ルヲ常トスレドモ亦上部ヨ

リスルモノナキニアラズシテ、太サ 180 μ 長サ 450 μ アリ。色ハ濃キ暗綠色。質ハ多肉、強韌ニシテ乾燥スルトキハ密ニ紙ニ附着シ、甚シク收縮スル爲メ表面溝狀ヲナス。

產地：低潮線附近ヨリ遙ニ深キ所ニ及ビ岩石ノ上ニアリ。鹿兒島、神瀨島、長崎縣南高來郡多比良村、野母、及平戸；土佐須崎、愛媛、相州江ノ島、館山及勝浦(房州)。

Holmes 氏ガ研究ニ供シタル標品ハ確ニ幼キモノニシテ氏ハ胞囊ノ長サヲ太サノ三倍ト認メ其短キコトヲ以テ *C. elongatum* ト區別スルーノ性質トセリ；然レドモ胞囊ハ實ニ斯ク短キモノニアラズ。

本種ハ外形甚シク *C. elongatum* Ag. ニ類ス；而シテ兩者ノ區別ハ余ヲ以テ見ルニ、胞囊ノ形狀ト其頂部ノ厚サトニアルモノト思惟ス。本種ノ胞囊ハ圓柱狀ニシテ頂端稍截形ヲ呈シ其部ノ膜ハ多少厚ク、殊ニ老成セル標品若クハ老成部ニ於テハ著シク増厚スルコト第 CXXXVI 圖版第3圖ニ見ル所ノ如シ；然ルニ *C. elongatum* ニアリテハ胞囊ハ倒卵形—棍棒狀ニシテ頂端圓ク且薄シ。余ガ參考書ニテ知り得タルダケニテハ *C. elongatum* ノ充分ナル大サヲ詳ニスル能ハザリシヲ以テ之ヲ知ラズト雖モ、本植物ハ長サ往々 90-100 cm. ニ達ス。

C. elongatum Ag. ハ從來本邦ニ産スルモノトシテ報ゼラレタリ、Suringar, Kjellman ノ如キ然リ；就中、Kjellman 氏ハ野母ヨリ得タリトシテ此種ヲ報ジ其胞囊ヲ圖説ス。予ガ同所ヨリ得タル予ノ標品ヲ見ルニ或胞囊ハ *C. elongatum* ノニ似テ稍倒卵形—棍棒狀ノモノアリト雖モ同一ノ體ニ於テ圓柱狀ノ稍截形ヲナセルモノ多數ヲ占ムルコトヲ見タリ。今現在ノ智識ニテハ若シ Holmes 氏ノ *C. divaricatum* トシタルモノガ確ニ *C. elongatum* ト別種ニシテ同一物ナラズトセバ予ハ本邦ニ *C.*

elongatum ノ存在ヲ疑フモノナリ。予ハ氏ノ標品ヲ見ザレドモ此處ニ圖說シタルモノガ氏ノ種ト同一ナルハ蓋シ疑ヲ容レズト思惟ス。

予ハ予ノ標品中ニ Reinbold 氏ヨリ送ラレタル Brasil 産ノ *C. elongatum* ノ一標品ヲ藏スルヲ以テ比較ノ爲メ之ガ構造ヲ研究シテ兩者ノ區別ハ胞囊ノ形狀ト其頂部ノ厚サトニ存スルコトヲ思ヘリ。*C. elongatum* ハ胞囊ノ膜薄キタメ之ヲ乾カスニ當リテ薄クシテ軟カニナルモノニハアラザルカ、然ルニ *C. divaricatum* ハ胞囊ノ膜厚キ爲メ稍厚クシテ硬キ乾燥品トナルモノナルベシト思ハル。

f. *hybrida* Okam. 第 CXXXV 圖版, 17 圖。

一部ノ胞囊ハ尖リ一部ノモノハ圓シ。

體形、色澤及體質ハ全ク *C. divaricatum* Holm. ニ異ナラズト雖モ胞囊ノ形狀ヲ異ニシ、其一部ハみる(*C. mucronatum* var. *californicum* J. Ag.) ノ如ク尖リ一部ハ *C. divaricatum* ノ如ク圓クシテ厚シ、之ガ爲メ手觸リモ亦一部ハザラザラシ一部ハ平滑ナリ。多分 *C. mucronatum* J. Ag. var. *Californicum* J. Ag. ト *C. divaricatum* Holm. トノ間ニ生シタル雜種形ナルベシ。

第 CXXXV 圖版, 17 圖: *Codium divaricatum* Holm. f. *hybrida* Okam. ノ體ノ橫斷面ノ一部, $\frac{5.4}{1}$ 。

第 CXXXVI 圖版. 1: *Codium divaricatum* (non Gepp) Holmes ノ不規則ニ分歧シタルモノ、自然ノ狀態, $\frac{1}{1}$ 。—2: 正シク叉狀ヲナセルモノ、一部, $\frac{1}{1}$ 。—3-7: 胞囊ノ種々ノ形狀; 3-4, 及 7 ハ I ニ示シタルモノヨリ得タルモノ; 5-6: 江ノ島産; 3-6: $\frac{5.4}{1}$; 7: $\frac{9.1}{1}$; 6 雄性ガメート囊ヲ有スルモノ。—8: 雌性ガメート, (安房白濱, 五月) 高度廓大。





K. Okamura del.

F. Furusawa col.

Dictyota spinulosa Harv. はりあみち

Dictyota spinulosa Harv.

Nom. Jap.: *Hari-amidzi*.

PL. CXXXVII.

Dictyota spinulosa Harv. in *Beechey's Voy. (Bot.)* p. 275; J. Ag. Sp. I, p. 97; Id. Till Alg. Syst. V, p. 100; Kuetz. Sp. p. 556; Id. Tab. Phyc. IX, t. 26, f. II; De Toni Syll. Alg. III, p. 270; Martens Preus. Exped. p. 130; Heydr. Einige Algen v. d. Loo-choo- oder Riu-Kiu-Inseln p. 102.

Fronds tufted rising from a scutate disc, 25–30 cm. high, stupose at base, broadly linear, 2–3 times pinnately decomposed in an alternate manner, spirally torted; pinnae ovate or ovato-lanceolate in outline, erecto-patent with round axils; pinnulae erect or erecto-patent with round axils, roundish obtuse or bifid at apex. Rachis of every segments slightly flexuose. Main segments measure 5–10 mm. in breadth, gradually becoming narrower above, lessening to 2–3 mm. in ultimate segments and ciliato-serrated at margin. Surface rarely smooth and free from proliferations, but usually more or less furnished with minute spinose proliferations. In a robust frond proliferations are more numerous and much elongated in short, linear or linear-oblong leaflets densely arising from the median portion of segments on both surfaces.—*Antheridial sori* roundish or ovate, evenly scattered over surfaces without any order. *Tetrasporangia* more or less densely collected along the median portion of both surfaces of frond. *Colour* yellowish-brown. *Substance* membranaceous and the plant imperfectly adheres to paper in drying.

Hab.: Ryukyu, Ogasawara-jima, Kashiwajima (Prov. Tosa), Nagasaki.

PL. CXXXVII. Fig. 1: small frond of *Dictyota spinulosa* Harv., $\frac{1}{1}$.—Fig. 2-3: upper segments bearing proliferations; 2: $\frac{3}{1}$; 3: $\frac{1}{1}$.—Fig. 4: two proliferated segments, $\frac{1.5}{1}$.—Fig. 5: portion of segments bearing antheridial sori, (*a*, *a*), hairs (*h*,) and proliferations; $\frac{8}{1}$.—Fig. 6: beginning of antheridial sorus, *a*, surrounded by envelope, *h*, $\frac{17.5}{1}$.—Fig. 7: the same a little advanced; characters same as fig. 6; $\frac{17.5}{1}$.—Fig. 8: the same fully formed, $\frac{17.5}{1}$.—Fig. 9: antheridial sori viewed from above, $\frac{17.5}{1}$.—Fig. 10: segments bearing tetraspores; proliferations taken out of view magd.—Fig. 11: portion of fig. 12 magd., $\frac{1.5}{1}$.—Fig. 12: portion of fig 10 magd. showing proliferations, $\frac{5}{1}$.—Fig. 13: tetraspores, $\frac{5.4}{1}$.—Fig. 14: beginning of hairs, $\frac{22.0}{1}$.

Dictyota spinulosa Harv.

はりあみち 岡村 稱

第 CXXXVII 圖版.

體ハ叢生シ、圓盤狀根ヨリ立ち、25-30 cm. 高ク、下部黄褐色ノ毛茸ヲ存スルコト 5-7 cm. ノ高サニ及ビ、幅廣キ線狀ニシテ、2-3 回羽狀ニ互生シ、螺旋狀ニ捻レタリ；羽枝ハ輪廓卵形乃至卵形—披針狀ニシテ、直立—廣開シ、腋圓シ；小羽枝ハ直立又ハ直立様廣開シ、腋圓ク、頂端鈍圓又ハ二裂ス。各部ノ枝ハ輕ク雁木狀ニ屈曲ス。主枝ハ幅 5-10 mm. アリテ漸次上方ニ細ク遂ニ最末枝ニ至リテ 2-3 mm. トナル、而シテ縁邊ハ粗ク銳鋸齒ヲナス。表面ハ稀ニ平滑ニシテ副枝ナシト雖モ概テ多少



Enteromorpha Linza (L.) J. Ag. うすばあをのり.

刺狀ノ小サキ副枝ヲ存ス。強盛ナル體ニ在リテハ副枝ハ甚ダ盛ニシテ短キ線狀又ハ線狀—長橢圓狀ノ小葉ニ伸ビ兩面ノ中央部ニ沿フテ密生ス。—雄性器群ハ圓形又ハ卵圓形ニシテ體ノ兩面ニ別段ノ規則ナク散在ス。四分胞子囊ハ兩面ノ中央部ニ沿フテ多少密ニ集ル。色ハ黃褐色ナリ。質ハ膜質ニシテ乾燥スルトキハ紙ニ附着セズ。

產地：琉球，小笠原島，土佐，柏島，長崎。

第 CXXXVII 圖版。1: はりあみち, *Dictyota spinulosa* Harv., ノ小ナル體, $\frac{1}{1}$.—2-3: 副枝ヲ有スル上部ノ枝; 2: $\frac{3}{1}$, 3: $\frac{1}{1}$.—4: 二個ノ副枝, $\frac{15}{1}$.—5: 雄性器群, (*a*, *a*), 毛, (*h*), 及副枝ヲ有スル枝ノ一部, $\frac{8}{1}$.—6: 雄性器群ノ初期, *a*; 群ヲ圍ム細胞, *h*; $\frac{17.5}{1}$.—7: 同上ノ稍進ミタルモノ; 指字ハ 6 圖ニ同ジ, $\frac{17.5}{1}$.—8: 同上ノ充分形成セラレタルモノ, $\frac{17.5}{1}$.—9: 雄性器群ヲ上ヨリ見タルモノ, $\frac{17.5}{1}$.—10: 四分胞子ヲ有スル枝; 副枝ハ全部取除キタリ, 廓大.—11: 12 圖ノ一部ヲ廓大シタルモノ, $\frac{15}{1}$.—12: 10 圖ノ一部ヲ廓大シタルモノニシテ副枝ヲ示ス, $\frac{5}{1}$.—13: 四分胞子, $\frac{54}{1}$.—14: 毛ノ初期, $\frac{220}{1}$.

Enteromorpha Linza (L.) J. Ag.

Nom. Jap.: *Usuba-awonori*.

PL. CXXXVIII.

Enteromorpha Linza (L.) J. Ag. Till Alg. Syst. VI, p. 134, t. 4, f. 110-112; Hauck Meeresalg. p. 427; De Toni Syll. Alg.,

I, p. 124; Collins Green Alg. N. Am. p. 206; Børgesen Mar. Alg. Faeröes, p. 489.—*Ulva Linza* L.; Lyngbye Hydr. Dan. p. 32; Harv. Phyc. Brit. t. XXXIX.—*Phycoseris crispata* Kuetz. Sp. p. 476; Id. Tab. Phyc. VI, t. 17, II.—*Ulva Enteromorpha* var. *lanceolata* Le Jolis List. Alg. Cherb. p. 42.—*Phycoseris lanceolata* Kuetz. Sp. p. 475; Id. Tav. Phyc. VI, t. 17, I, and many other forms.

Fronds gregarious, elongated, flat, thin-membranaceous, linear, linear-lanceolate or oblanceolate; entirely simple or so for the most part excepting the lower portion of frond where a few branches are often proliferated. They taper strongly below, undulated or flat at margin, more or less wrinkled on the surface, often twisted or longitudinally folded, 10–50 cm. long, 0.5–15 cm. broad. When young, the frond is filiform and tubular; but in such a young and slender one as measuring 1–1.3 mm. in diameter through, the inner cavity is here and there interrupted by the union of the membrane. In more broad frond the membrane is for the most part united except marginal portions where the interior of frond is left as a hollow space and also a few cavities are here and there left in the median part. In fully grown frond, hollow space is not found but in the stipe and marginal portions, the membrane of remaining portion being united after the manner of *Ulva*.

Cells of the stipe are clavate, vertically inserted and subseriated longitudinally; those standing a little above are elongated polygonal and arranged in a longitudinal direction. In the upper broader portion, cells become smaller and irregularly disposed. The inner wall of membrane is somewhat thicker than the outer wall at marginal tubular portion. Cells in a cross section of frond

are subaequal to breadth or $1\frac{1}{2}$ –2 times as high as broad. Gametes are formed in the cells of the upper portion of frond. *Colour* herbaceous green. *Substance* thin membranaceous.

Hab.: On stones and wood works, left bare by the tide. Widely distributed.

Several forms are met with, of which *forma crispata*, with edges much crisped and folded, and *forma lanceolata*, with edges even or plicate, not crisped seem to be more common. In one or the other of these forms the species seems common mostly on the Pacific coast of this country. It is abundantly found in winter and spring usually in brackish water in calm. places as Tokyo bay.

PL. CXXXVIII. Fig. 1: fronds of *Enteromorpha Linza* (L.) J. Ag. *forma lanceolata*, $\frac{1}{1}$.—Fig. 2: frond of *forma crispata*, unfolded, $\frac{1}{1}$.—Fig. 3: young simple frond, for the most part tubular within, but here and there already united, $\frac{1}{1}$.—Fig. 4: cross-section of free marginal portion, $\frac{390}{1}$.—Fig. 5: cross-section of the median part united, $\frac{390}{1}$.—Fig. 6: surface view of membrane, highly magd.—Fig. 7: gametangia, highly magd.—Fig. 8–10: surface view of different parts of one and the same frond, $\frac{390}{1}$; 8: upper membranous portion; 9: just above rooting-cell region; 10: basal rooting cells.

Enteromorpha Link 1820.

あをのり属.

ULVACEÆ あをさ科.

體ハ初メ一列ノ細胞ヨリ起リ, 數々分裂シテ中空管狀ノ體トナリ, 其膜ハ一層ノ細胞ヨリ成ル; 其最モ簡單ナル種類ニ

テハ中空ノ状態トナルニ至ラズシテ老成スルニ至ルモ二列又ハ數列ノ細胞ヨリ成ルノミナルアリ；又始メハ附着スルモ後游離スルモノアリ；單條又ハ分岐ス。細胞ハ圓形又ハ多角形ニシテ、色素體ハ一個ノ盤狀體ヲナシ細胞ノ内壁ニ亘リ通常一個ノ「ピレノイド」ヲ其中央ニ有ス。細胞分裂ハ下部ノ枝ヲ出セル細胞ノ外總テノモノニ於テ起ル。下部ノ細胞ハ棍棒狀トナリ其一端ヨリ無色ノ毛狀根ヲ出シ、此モノ體ノ内部ヲ走り相集リテ莖及根ヲナス。根ヲ出セル細胞ノ外總テ生殖細胞ヲ形成スルヲ得。「ガメート」ハ卵形ニシテ一個ノ紅色ナル眼點ト二條ノ纖毛トヲ有シ、各細胞中ニ8個、16個又ハ尙多ク形成セラレ、細胞膜ノ孔ヨリ出テ接合ス。游走子ハ一個ノ紅キ眼點ト四條ノ纖毛トヲ有ス。接合子ハ直ニ萌發シ、其萌發スルニ當リテハ一端ニ膜ノ柄ヲ形成ス。

大ナル屬ニシテ *E. Linza* ヲ以テ *Ulva* ト連絡ス；又一方ニ於テハ *Monostroma groenlandicum* ハ *Enteromorpha* ノ簡單ナル絲狀ノ種類ト之ヲ區別スルコト容易ナラズ。*E. intestinalis* ハ殆ド全世界ニ普ク、他ノ種モ亦弘ク分布スルモノ多シ。何レモ海ニ産スルノミナラズ又鹽泉及鹽山ニ在リ；殊ニ淡鹹水ノ混ズル所ニ多ク、時ニ又全ク淡水中ニ在リ。

海水鹹度ノ種々變化スル所ニハ往々ニシテ種類ノ一定セザルモノヲ生ズルコトアリ；例ヘバ米國 *Syracuse* ノ鹽山附近ニテ採集シタル標品ハ同一ノ體ニ於テ *E. compressa*, *E. crinita* 及 *E. marginata* ノ性質ヲ存スルモノアリトノ記事ヲ *Collins* ノ *Green Alg. of N. Am.* ニ記セリ。

本邦各地種々ノ種類ヲ産ス。——屬ノ名ハ *Enteron* (腸) ト *Morphe* (形) トヨリ成ル。

Enteromorpha Linza (L.) J. Ag.

うすばあをのり 岡村 稱

第 CXXXVIII 圖版.

體ハ多數一所ニ叢生シ、長ク、扁平、葉狀、薄キ膜狀ニシテ、線狀、線狀—披針狀又ハ倒披針狀ナリ；單條又ハ體ノ下部ヲ除ク外大部分單條ヲナシ下部ニ往々僅少ノ枝ヲ副出ス。體ハ下部甚シク細ク、縁邊波皺シ、又ハ平坦、表面多少皺ヲ有シ、往々捻レ又ハ縦ニ褶襞ス、10-50 cm. 長ク、0.5-1.5 cm. 廣シ。幼者ハ絲狀ニシテ中空ナリ；然レドモ直徑僅ニ 1-1.3 mm. 位ナル細小ノモノニテモ内腔ハ所々癒着シテ閉塞ス。其漸ク廣キ體ニテハ膜ハ大部分癒合シテ只兩縁部ノミ癒着スルコトナク其部ニ内腔ヲ存ス而シテ所々小サキ空所ヲ殘存スルコトアリ。充分成長シタル體ニテハ莖及兩縁部ノ外内腔ヲ認ムベカラズシテ大部分ハ *Ulva* (あをさ屬) ノ如ク癒着シテ存ス。

莖ノ細胞ハ棍棒狀ニシテ膜ニ堅ニ埋マリ、體ノ長サノ向キニ縦ニ列ス；此部ヨリ少シク上ナル部分ノ細胞ハ稍長味ナル四角形ニシテ縦ニ列ス；尙上部ノ膜部ノモノハ細胞小ニシテ不規則ニ列ス。膜ノ内壁ハ其外壁ヨリモ幾分厚シ、殊ニ縁邊部ニ於テ然リ。細胞ハ體ノ横斷面ニ於テ高サト幅ト略等シキカ又ハ幅ノ一倍半乃至二倍高シ。「ガメート」ハ體ノ上部ノ細胞中ニ形成セラル。色ハ鮮綠色。質ハ薄膜質ナリ。

產地：灣内ノ如キ所ノ石及杭、筏等ノ上ニ生ズ。分布弘シ。朝鮮慶尙北道迎日灣。

分布：大西洋ノ北部 Faeroes 島, Iceland, 北海, バルチツク海等ヨリ地中海ニ至リ；ペルー, ブラジル, 西印度, タスマニアニ及ブ。

種々ノ形態ノモノアリテ一々區別スベカラザレド先人ノ認メテ forma crispata トシタルモノ即チ縁邊甚シク縮皺シ且褶襞シタルモノ及ビ forma lanceolata トシタルモノ即チ縁邊平坦若クハ褶襞シ甚シク縮マラザルモノ、如キハ最モ普通ニ見ル所ナリ。此等ノ形態ノ何レカヲナセルモノ我太平洋沿岸ニ普通ナルガ如シ。本種ハ東京灣ノ如ク靜穩ニシテ淡水量ノ多キ海ニ殊ニ甚ダ多量ナリトス。本種ハ各地ニ於テ採リテ食用トシあをのりト稱ス；然レドモあをのりノ名ハ此屬ノ通稱ニシテ必ズシモ一種ヲ指スニアラズ。

第 CXXXVIII 圖版。1: うすばあをのりノ一品種 *Enteromorpha Linza* (L.) J. Ag. forma lanceolata, ノ體, $\frac{1}{1}$ 。—2: 他ノ品種, f. crispata ノ褶ヲ展キタルモノ, $\frac{1}{1}$ 。—3: 幼キ單條ノ體, 内部概チ中空ナレドモ所々既ニ癒着セルモノ, $\frac{1}{1}$ 。—4: 兩縁ノ横斷面, $\frac{390}{1}$ 。—5: 葉ノ中央部ノ横斷面ニシテ兩方ノ膜癒合シタルモノ, $\frac{390}{1}$ 。—6: 膜ヲ表面ヨリ見タルモノ, 高度廓大。—7: ガメート囊, 高度廓大。—8-10: 同一ノ體ノ各部ヲ表面ヨリ見タルモノ, $\frac{390}{1}$; 8: 上部; 9: 根ヲ出セル部分ノ直グ上ノ部分; 10: 根ヲ出セル部分ノ細胞。

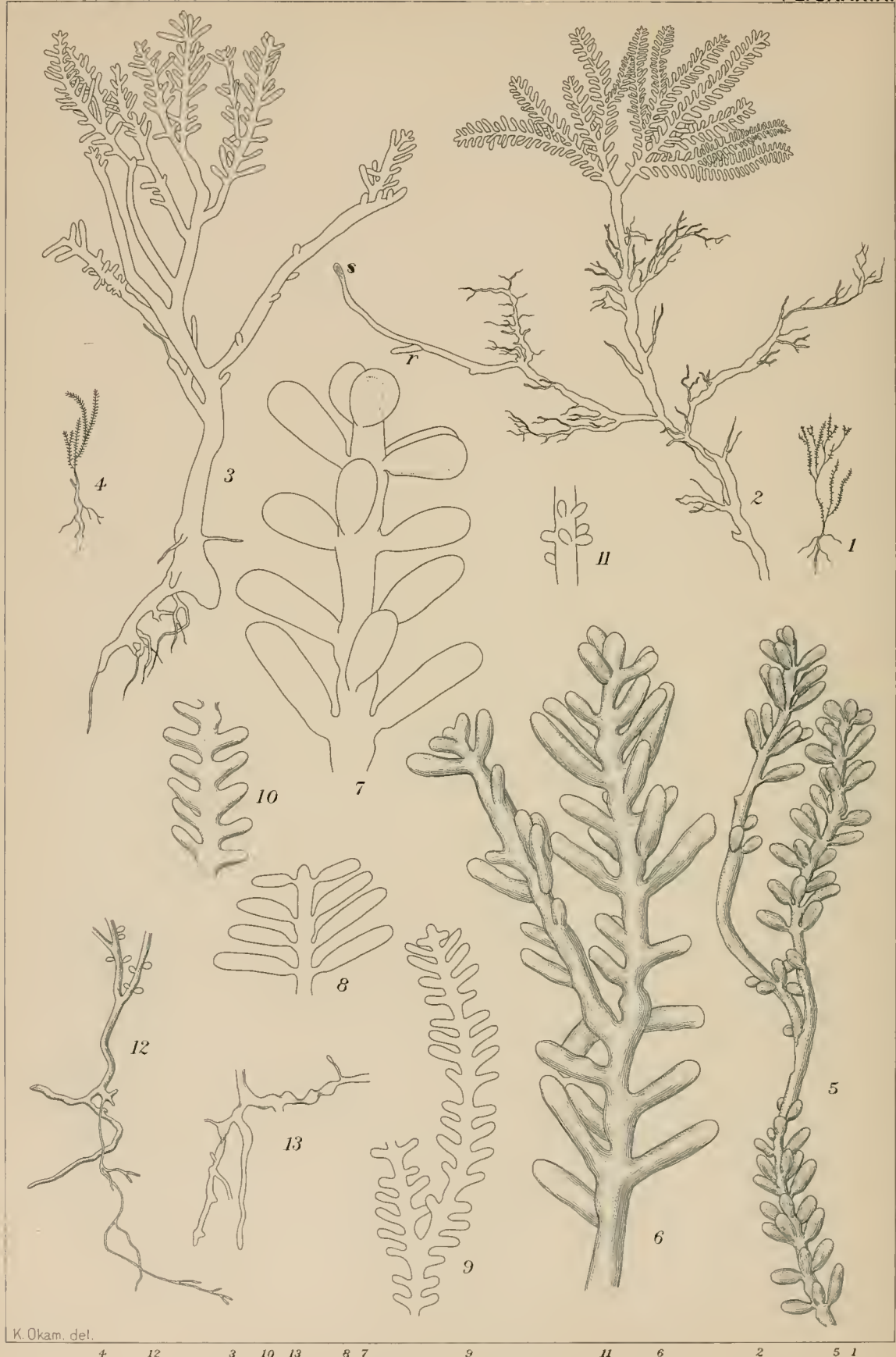
Caulerpa ambigua Okam.

Nom. Jap.: *Hime-Iwadazuta*.

PL. CXXXIX.

Caulerpa ambigua Okam. Alg. fr. Ogasawara-jima (Bot. Mag. Tokyo, Vol. XI, No. 119, 1897) p. 4, Pl. I, f. 3-12; Weber v. Bosse Monogr. d. Caul. p. 388; Reinke Ueber Caul. p. 42, f. 67;





Caulerpa ambigua Okam. ひめいわづた.

Weber v. Bosse Liste d. Alg. d. Siboga I, p. 97, fig. 24; Vickers Phycokologica Barbadosensis p. 25, Pl. XXXVII.

Fronde small, weak and filiform with a short not-well-defined (not as is usual for other related species) surculus, attaining a height of 1-2 cm. being ca. 100 μ thick. Only one or two fronds arise from an extremity of the surculus which is unequal in the thickness, being here and there swollen at longer or shorter intervals and root fibres are mostly emitted from the swollen portions. Plant branches divaricato-alternately and branches are loosely closed with ramenta. Ramenta are typically distichous and opposite; but this regular disposition is disturbed by the presence of some irregularly inserted ones. They are separated by wider distances and the rachis is distinctly visible through the interstices. They are oblong or obovate, being slightly swollen upwards, and are neither falcate nor pointed, but very patent, straight and very obtuse at apex. The bases of ramenta are sometimes equally broad or a little narrowed as if pedicellated. Ramenta attain in a fully grown frond a length of 216-354 μ ; the shorter one half that amount. The breadth is almost equal to or a little thicker than the diameter of the rachis in swollen ones, being somewhat slender in the more cylindrical ones. The portion of rachis intercepted between two opposite ramenta is slightly constricted as if articulated; it is more especially so in frond bearing ramenta constricted at base. In frond bearing ramenta which are not narrowed at base, the constriction of rachis is not so marked. *Color* bluish green. *Substance* soft and thin membranaceous.

Hab.: On rocks near low tide-marks in shady place at Nemoto in Prov. Boshyu; Ogasawarajima.

Geogr. distr.: Paternoster Isl. (Siboga, depth of 27 m.); Barbados (Antilles).

PL. CXXXIX. Fig. 1: frond of *Caulerpa ambigua* Okam. in nat. size.—Fig. 2-3: two fronds (from Nemoto, Prov. Boshyu) slightly magd.; *s*, growing apex of aerial shoot; *r*, root; $\frac{8}{1}$, $\frac{12}{1}$ resp.—Fig. 4: frond showing distichous arrangement of ramenta, $\frac{87}{1}$.—Fig. 5: portion of the frond drawn in fig. 1, $\frac{32}{1}$.—Fig. 6: portion of the frond drawn in fig. 3, $\frac{54}{1}$.—Fig. 7: portion of the frond shown in fig. 1, $\frac{85}{1}$.—Fig. 8: terminal portion of a branch showing distichous arrangement of ramenta, $\frac{37}{1}$.—Fig. 9: portion of the frond shown in fig. 4, $\frac{50}{1}$.—Fig. 10: the same as fig. 9, $\frac{85}{1}$.—Fig. 11: lower portion of the frond shown in fig. 4 to show some irregularities in the arrangement of ramenta, $\frac{85}{1}$.—Fig. 12: lower portion of the frond drawn in fig. 1, magd.—Fig. 13: root of the frond shown in fig. 4, $\frac{16}{1}$. (All the figures except fig. 2, 3 and 6 have been drawn from the fronds get from Ogasa warajima).

Caulerpa ambigua Okam.

ひめいわづた 岡村稱.

第 CXXXIX 圖版.

體ハ矮小, 纖弱, 絲狀ニシテ明ニ區別スベカラザル短キ匍枝ヲ有シ, 1-2 cm. 高ク, 約 100 μ 太シ. 匍枝ノ一端ヨリ一個若クハ二個ノ體ヲ生ズ; 匍枝ハ太サ不同ニシテ所々太ク概テ其太キ部分ヨリ絲狀根ヲ生ズ. 體ハ互生ニ出デ、廣開シ、緩ク小枝ヲ排列ス. 小枝ハ枝ノ兩縁ヨリ對生スルヲ規則トスレドモ此正シキ排列ハ所々不規則ニ出ル小枝アル爲ニ亂ル.

小枝ト小枝トノ間隔ハ稍廣キ爲メ此間隙ヨリ枝ヲ窺フヲ得ベシ。小枝ハ長橢圓形又ハ倒卵形ニシテ少シク頂端ノ方ニ膨レ鈎狀ヲナサズ又尖リモセズ、極メテ廣ク出デ、眞直ニシテ頂端鈍圓ナリ。小枝ノ基部ハ時ニハ其上部ト同ジ太サノコトモアレドモ又少シク細クナリテ恰モ柄ノ如ク成レルコトアリ。充分成長シタル體ニアリテハ小枝ハ長サ $216-354 \mu$ アリ、稍短キモノハ其半分程ナリ。幅ハ其之ヲ支持スル枝ノ太サト殆ド等シキカ又ハ稍太キモノニテハ其枝ノ直徑ヨリ少シク太ク、其圓柱狀ナルモノニアリテハ稍細シ。相對スル小枝ノ間ニ存スル枝ノ部分ハ恰モ關節シタル如ク少シククビレタリ、殊ニ小枝ノ基部ノクビレタルモノニ於テ著シ；小枝ノ基部ノ細カラザルモノニアリテハ其部ノ枝ノクビレタルコトハ彼ノ如ク著シカラズトス。鮮綠色ニシテ軟ク薄膜質ナリ。

產地：低潮線近キ岩石ノ上ニアリテ蔭ノ所ヲ好ムモノ、如シ、房州根本；小笠原島。

分布：Paternoster 島 (27 m. ノ深所), Barbados (Antilles).

PL. CXXXIX. 1: *Caulerpa ambigua* Okam., ひめいわづたノ體, $\frac{1}{1}$.—2-3: 房州根本産ノ二個體, 廓大; s , 直上スベキ體ノ成長點; r , 根; 2: $\frac{8}{1}$, 3: $\frac{12}{1}$.—4: 小枝ノ二縱列ヲナセルモノ, $\frac{37}{1}$.—5: 1 圖ニ示シタル體ノ一部, $\frac{30}{1}$.—6: 3 圖ニ示シタル體ノ一部, $\frac{54}{1}$.—7: 1 圖ニ示シタル體ノ一部, $\frac{85}{1}$.—8: 枝ノ上部ノ小枝ノ二縱列ヲナスコトヲ示ス, $\frac{37}{1}$.—9: 4 圖ニ示シタル體ノ一部, $\frac{50}{1}$.—10: 9 圖ト同シ, $\frac{85}{1}$.—11: 4 圖ニ示シタル體ノ下部ニシテ小枝ノ排列ノ不規則ナルモノアルヲ示ス, $\frac{85}{1}$.—12: 1 圖ニ示シタルモノ、下部, 廓大.—13: 4 圖ニ示シタル體ノ根, $\frac{18}{1}$. (2, 3 及 6 圖ノ他ハ皆小笠原島ヨリ得タル標本ニ依テ圖シタリ).

Ecklonia stolonifera Okam.

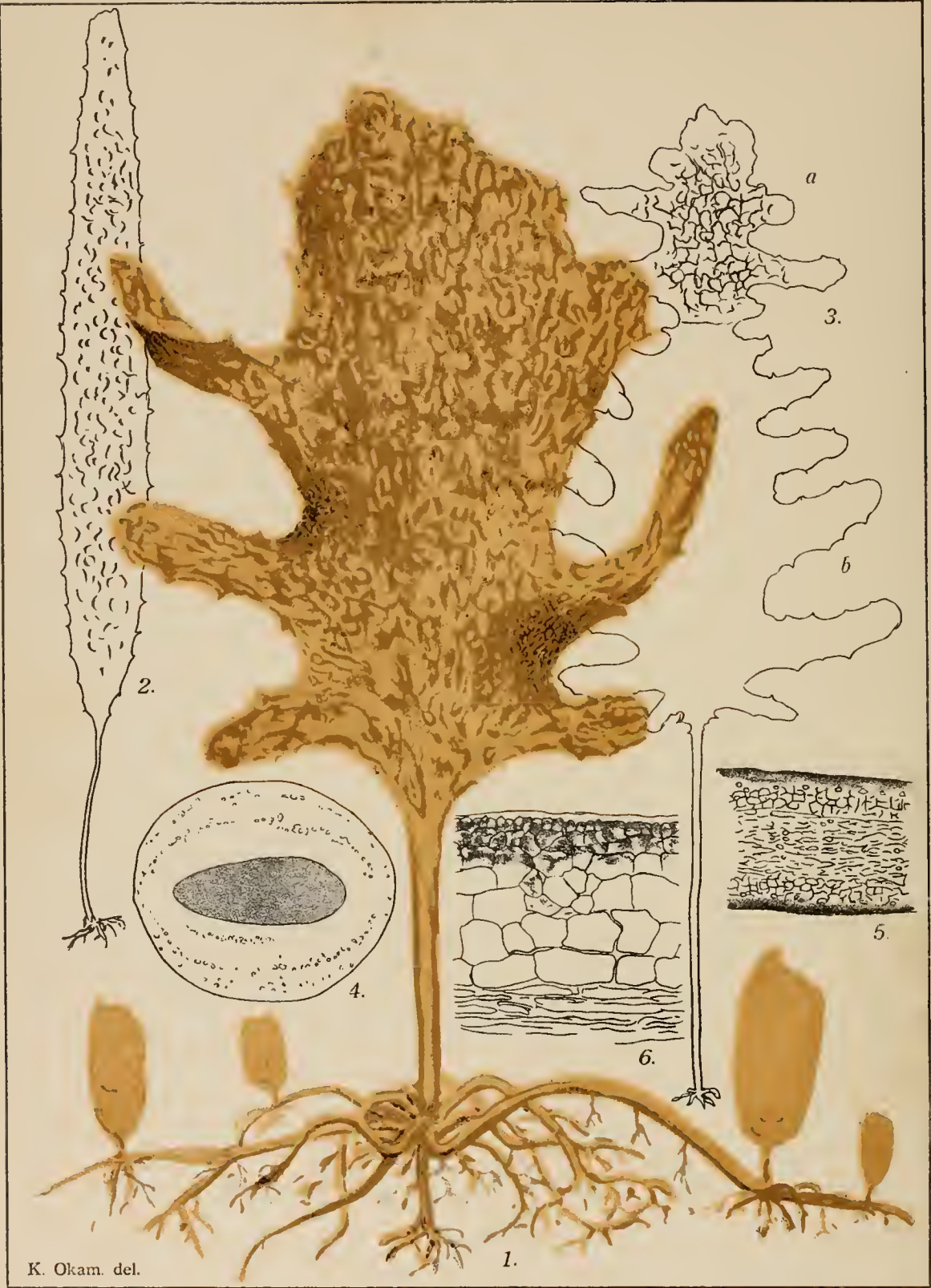
Nom. Jam.: *Tsuru-arame*.

PL. CXL.

Ecklonia stolonifera Okam. In the Marine Algae of Chosen (Report o Imp. Bureau of Fisheries, Scientific Investigations, Vol. II, 1913; 漁業基本調査報告, 和文第三冊, 117 頁, 第二十四圖版) p. 20, PL. VI.

The *fronds* are broadly linear or lanceolate, $50-83 \times 15-30$ cm. simple or simple-pinnately branched, densely rugulose, roughly toothed at margins, cuneate or roundish-ovate at base. The stem is cylindrical, 13-23 cm. long, 3-5 mm. in diameter, solid, furnished with more or less irregularly set double rows of mucilaginous lacunae. The root fibres are verticillately arising, some of which elongate into stolon, at whose apex a young leaflet is formed and grows up into a new frond. The primary frond decays down during autumn more or less toward the base of lamina, where a new lamina grows up during the winter, which takes the place of the lamina of the preceeding year after the manner of *Laminaria saccharina* or *L. Cloustoni*. From the existence of double modes of the vegetative reproduction, the formation of zoosporangial sori seems to be suppressed.

In the cross-section of stem a ring of mucilaginous lacunae is seen half-way between the cortical portion and medullary layer and another ring of smaller and more irregularly scattered lacunae is situated just beneath the epidermal layer. Besides these two rings, there is often present a portion of another ring near the medullary layer. In lamina a layer of small roundish lacunae is situated near the epidermal layer of both surfaces and the thickness of the medullary layer is just the same as the breadth of cortical



Ecklonia stolonifera Okam. つるあらめ.

portions of both surfaces taken together. *Colour* light yellowish brown, turning to black in drying.

Hab.: On rocks in the depths of 2-6 fathoms. Strait of Hirado (Prov. Hizen), Wajima (Prov. Noto), Nō (Prov. Yechigo), Awomori (Mr. Higashi); Hanseiho and Zetsuyei-tō near Fusan (Chōsen).

When the frond is quite simple, it is difficult to distinguish the present plant from *Laminaria*. But in the latter, as far as we know, marginal teeth are never present and they may be taken as a characteristic distinguishing an *Ecklonia* from *Laminaria*. As the frond of an Ecklonian plant, as a rule, branches or divides pinnately, the marginal teeth may be considered as rudiments of pinnae when the frond is quite simple, as may be inferred from the homology between marginal teeth of frond and tooth-like beginning of pinnae formed on both sides of the growing portion near the base of the frond.

Again rugae seem to be taken as another characteristic. In Laminarian plants, rugae (considering bullations or network-like wrinkles of the same meaning as rugae) when present are not equally spread over the frond after the manner of an *Ecklonia*, but usually are arranged, as far as I know, on both sides of the median fascia. (*Laminaria radicata* Kjellm. is, in my opinion, not a *Laminaria*, but perhaps an *Ecklonia* or a new genus, on account of the presence of marginal teeth, pinnate lobes and equally scattered bullations).

PL. CXL. Fig. 1: older frond of *Ecklonia stolonifera* Okam., $\frac{1}{1}$.—Fig. 2: fully grown and not-branched frond, $\frac{1}{4}$.—Fig. 3: newly grown frond, *b*, taking the place of the older one, *a*, of the preceeding year, $\frac{1}{3}$.—Fig. 4: cross-section of stem, $\frac{5}{1}$.—Fig. 5:

cross-section of lamina, $\frac{56}{1}$.—Fig. 6: portion of the cross-section of lamina; α , lacuna, $\frac{229}{1}$.

Ecklonia Hornem. 1828.

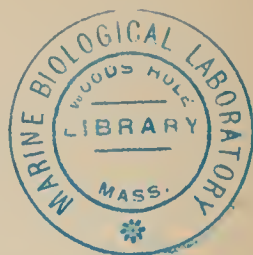
あ ら め 属.

LAMINARIACEAE こ ん ぶ 科.

可ナリ大ナル體ニシテ圓柱狀又ハ扁圓ノ分岐セザル莖ヲ有シ、莖ノ下部ヨリ根ヲ輪生ス；或ハ匍匐莖ヲ出シテ其一部若クハ先端ヨリ新條ヲ生ズルモノアリ。 莖ニハ 1-2 層ノ環狀ニ列セル粘液腔道ヲ存シ、始メ實質ニシテ後一部中空トナルモノアリ。 葉ハ莖ノ上部ニ在リテ幅濶キ線狀又ハ披針狀ヲナシ稀ニ單條ナレドモ概チ其兩縁ヨリ單條又ハ羽狀ニ分レタル枝ヲ羽狀ニ分岐シ、縁邊ニ粗キ鋸齒ヲ存ス；葉面平坦又ハ不規則ニ甚シク凹凸シテ皺ヲナス。 中央ノ葉ハ後多少上部ヨリ枯腐シテ基部ニ近ク脱落シ、莖ノ上端ニ叉狀ノ枝ノ如キ觀ヲ呈スルニ至ルモノアリ。 葉ノ兩面ニ沿フテ各一層ノ粘液腔道アリ。 子囊群ハ各部ノ葉ノ兩面ニ雲形又ハ籠狀ニ生ズ、「バラフ井シス」ハ楔形ナリ。 多年生ナリ。

從來學者ノ間ニ說アリテ莖ノ上部ノ葉ノ脱落セズシテ永久ニ存スルモノヲ Ecklonia トシ其墜チテ莖ノ上部叉狀ヲナスモノヲ Eisenia トシテ區別シタレドモ予ハ Eisenia ヲ否認スルモノナリ。

8-9 種アリ概チ太平洋ニ産ス、又 1-2 種大西洋ニ産スルモノアリ——屬ノ名ハ Ecklon 氏ノ名ニ基ヅク。



Ecklonia stolonifera Okam.

つるあらめ 岡村新稱 (青森方言ががめ).

第 CNL 圖版.

性質: 體ハ幅廣キ線狀又ハ披針狀ニシテ長サ 50-83 cm. 幅 15-30 cm. アリ, 單條又ハ一回兩縁ヨリ羽狀ニ分歧シ, 葉面密ニ皺ヲ存シ, 縁邊ニ粗キ鋸齒アリ, 基部楔形又ハ卵圓形ナリ. 莖ハ圓柱狀ニシテ, 長サ 13-23 cm. 幅 3-5 mm. アリ, 實質ニシテ多少不規則ニ配列セル二層ノ粘液腔ヲ存ス. 根ハ莖ノ下端ヨリ輪生シ, 匍匐莖ノ如ク伸張シテ所々ニ根ヲ生シ, 且頂端ヨリ新ニ葉ヲ生シテ一個體ヲナシ, 又更ニ匍匐莖ヲ出シテ其先端ニ新葉ヲ生ズルコトアリ. 在來ノ體ハ秋季迄ニ大部分ヲ失ヒ僅ニ其下部ヲ殘スノミ而シテ冬季中莖ノ上部ナル成長部ヨリ新ニ體ヲ生ジ在來ノ體ノ殘部ヲ上方ニ押上ケ, 遂ニ在來ノ體即チ前年ノ葉ニ代リテ後繼者トナルナリ. 此二様ノ生殖法アル爲メ游走子囊群ハ形成セラレザルモノ、如シ.

莖ノ横斷面ニ於テ粘液腔ノ一環狀列ハ髓層ト皮層トノ略ホ中央ニ存シ, 皮層ノ直下ニ又別ニ小ナル粘液腔ノ一層アリテ粗ニ散布ス. 此等二層ノ他ニ更ニ髓ニ近ク又他ノ一層ノ環狀列ノ一部ヲ存ス. 葉ニ於テハ皮層ノ下ニ極メテ小ナル粘液腔ノ一層アリテ兩面ニ存シ, 髓部ノ厚サハ兩面ノ皮部ヲ合セタルモノニ等シ. 色ハ黃褐色ニシテ乾燥スルトキハ黑色トナル.

產地: 2-7 尋ノ岩石ニ生ス. 肥前平戸海峡, 能登輪島(岡村), 越後能生(須田), 青森(東); 朝鮮半城浦; 絶影島(岡村).

備考: 體ノ全ク單條ナルモノニ在リテハ本植物ヲこんぶ屬(*Laminaria*)ノモノト區別スルコト難シ; 然レトモこんぶ屬ニ

於テハ吾人ノ知ル所ニテハ體ノ兩縁ニ決シテ鋸齒ヲ存スルモノアラズ。故ニ鋸齒ハ之ヲ以テこんぶ屬トあらめ屬(Ecklonia)トヲ分ツノ特徴ト認ムルヲ得ベシト考フ。凡ソあらめ屬ノ植物ハ規則トシテ羽狀ニ分歧スルモノナルカ故ニ本植物ノ如ク全ク單條ナルモノアルニ際シテハ鋸齒ヲ以テ羽狀ヲナスヘキ枝ノ發條セサルモノト見倣スヲ得ベシ。蓋シ、鋸齒ト羽狀ニ出ル枝トノ同性質ノモノタルコトハ莖ノ頂端ナル成長部ノ兩縁ニ於テ羽狀ニ出ル枝ノ幼者ノ齒狀ヲナセルヲ以テ爾ク考フルヲ得ベシ。予ハ又皺ヲモ一ノ特徴トナスヘシト思惟ス。凡ソこんぶ屬ノ植物ニ在リテハ予ノ知レル範圍ニ於テハ若シ皺アリト雖モ(葉ノ兩面ニ大小ノ膨レアルモノ又ハ網狀ノ凹凸アルモノ等總テ皺ト同様ト見倣ス)決シテあらめ屬ノモノ、如ク葉ノ全面ニ平等ニ散在スルコトナク葉ノ中央ニ一條ノ平坦ナル所謂中帶部(Fascia)ト稱スル所ヲ存シ其部ノ左右ニ配列セラル、モノ、如シ(あんとくめハ *Laminaria radicata* Kjellm. トセラレタルヲ以テ此說ニ反スル如ク見ユレトモ其羽狀裂片ヲ存スルコト、縁邊ニ鋸齒アルコト竝ニ全面ニ皺ノ存スルコトニ依リ予ハ之ヲ *Laminaria* ニ屬スルモノニアラズシテ多分あらめ屬カ又ハ新屬ニ屬スルモノトナスヲ以テ予ノ以上ノ說ニ反スルコトアラズ)。

第 CXL 圖版. 1: つるあらめ, *Ecklonia stolonifera* Okam. ノ老成セル體, $\frac{1}{1}$.—2: 充分成長セル體, 但シ分歧セザルモノ, $\frac{1}{4}$.—3, 前年ノ體, α , ヨリ新キ體, β , ヲ生ジ前年ノモノハ將ニ脱落セントスルモノ, $\frac{1}{3}$.—4: 莖ノ横斷面, $\frac{5}{1}$.—5: 葉ノ横斷面, $\frac{5}{1}$.—6: ノ横斷面ノ一部; α , 粘液腔道, $\frac{220}{1}$.





Codium cylindricum Holm. ながみ

Codium cylindricum Holm.

Nom. Jap.: *Nagamiru*.

PL. CXLI.

Codium cylindricum Holmes New Mar. Alg. from Japan (Linn. Soc. Journ., Bot., Vol. XXXI) p. 250, Pl. VII, f. 1 a, b.

*Fronde*s elongated, cylindrical, 1–15 m. long, 10–15 mm. thick in the thickest lower portion, distantly dichotomous in the middle and lower portions (often 1 m. or more parted) gradually becoming shorter upward. The branches expand beneath forks into cuneate or broadly triangular segments which become very much broad in lower portions often measuring 12 cm. or more in breadth. The axils are widely patent and round and branches become gradually slender above (2–3 mm. in diameter upward) ending in blunt apices. *Utriculi* are obovate or oblong rarely cylindrical, 250–900 μ in diam. (usually 400–500 μ), about 5–6 times as long as broad, rarely 9 times, that is 1.5–2 mm. long; thin-walled and rounded at top. Gametangia verticillated in 7–8 numbers near the apical portion, ovate or elliptico-oblong, 218–310 μ long, 110–127 μ broad. *Colour* light or yellow green, becoming deeper in drying. The *substance* is very brittle in fresh state, afterward becoming soft, and very much contracts and somewhat closely adheres to paper in drying.

Hab.: On rocks at 3–5 fathoms or deeper in calm places. Pref. Kagoshima; Nagasaki, Nomo and Goto (Prov. Hizen); Provs. Hiuga and Tosa; Ogasawara-Isl.; Oshima (Prov. Awa); Provs. Sagami and Boshyu.

Holmes puts this plant in the same section as *Codium galeatum* and *C. mamillosum*. This is without doubt an error due to the incomplete specimens sent to him. It belongs to the section *C. elongatii* J. Ag. In the fresh state the present plant is easily discernible from the related plants by its colour, its brittle substance and by its sufficiently large utriculi so as to give a granular appearance to the frond, each being perceptible even in naked eyes. In the herbarium specimens the deep-colored median longitudinal zone is fringed by pale-green borders. The translucence of this border is due to the existence of long and thick utricles.

In pearl-oyster beds this plant often causes a fearful damage suffocating oysters by piling up on it.

PL. CXLI. Fig. 1: terminal portion of a frond of *Codium cylindricum* Holm., $\frac{1}{1}$.—Fig. 2: diagrammatic illustration of an entire frond, with a basal portion, *a*.—Fig. 3: surface view of the upper branch showing large utriculi in nat. size.—Fig. 4: three young fronds, $\frac{1}{1}$.—Fig. 5-6: younger utriculi, $\frac{54}{1}$; $736 \mu \times 272 \mu$, $700 \times 345 \mu$. resp.—Fig. 7: utriculus bearing gametangia, 909μ thick, $\frac{42}{1}$.—Fig. 8: utriculus bearing gametangia and scars of colorless-hairs, (2 mm. long, 290μ thick), $\frac{54}{1}$.—Fig. 9-11: different forms of gametangia, $\frac{91}{1}$.

Codium cylindricum Holm.

ながみる。

くづれみる(岡村), あぶら

第 CXLI 圖版.

あぶら(三崎)さめのたすき

體ハ長ク, 圓柱狀ニシテ, 1-15 m.ニ達シ, 太サ下部ノ最モ太キ

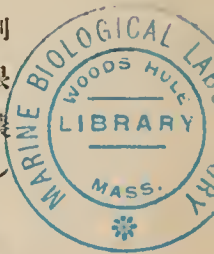
部分ニテ10-15 mm. アリ,下部及中央部ハ長距離ニ叉狀ヲナシ(往々1 m.若クハ尙ホ多ク距ルコトアリ),漸次上部ニ相接近ス.枝ハ分岐點ノ下ノ所ニテ楔形ニ展カリ又ハ三角形ヲナシ其幅ハ下部ノ方廣クシテ往々12 cm.若クハ夫以上ナルコトアリ.腋ハ廣開シテ圓ク,枝ハ漸次上方ニ細クナリ(上方ニハ直徑2-3 mm.トナル)鈍頭ニ了ル.胞囊ハ倒卵形又ハ長橢圓形ニシテ,稀ニ圓柱狀ヲナシ,直徑250-900 μ (通常400-500 μ),太サノ約5-6倍長ク(稀ニ9倍ナルコトアリ即チ1.5-2 mm.長シ)頂端圓クシテ膜薄シ.ガメート囊ハ頂部ニ近ク7-8個輪生シ,卵形又ハ橢圓形—長橢圓形ニシテ,218-310 μ 長ク,110-127 μ 太シ.色ハ淡黃綠色ニシテ乾燥スルトキハ濃綠色トナル.質ハ新鮮ノモノニテハ極メテ脆ケレトモ,後柔軟トナリ乾燥スルトキハ甚シク收縮シ稍密ニ紙ニ附着ス.

產地: 3-5 尋ノ岩ニ生ス,外海ニ近キ靜穩ナル灣ノ如キ所ニアリ.小笠原島,鹿兒島,沖小島(薩),長崎,野母,五島有川,日向島ノ浦島,土佐柏島片島,阿波大島,相模江島,三崎,安房館山.

Holmes 氏ハ *Codium mamillosum* ト同一ノ section 中ニ本種ヲ置キタレトモ,此ハ氏ニ送ラレタル標本ノ不完全ナル破片ナリシヨリ誤リタルモノニシテ本種ハ實ニ *Codia elongatii* J. Ag. ノ Section 中ニ入ルヘキモノナリ.

本種ハ其生鮮ナルモノニアリテハ其色,其脆キ體質及其充分大ナル胞囊ニヨリテ他ノ之ト類似シタル種類ヨリ區別スルコト容易ナリ;胞囊ノ大ナルコトハ顆粒狀ヲナシテ肉眼ニテモ其各粒ヲ認ルヲ得ル程ナリ.乾燥標本ニテハ中央ノ濃キ幅廣キ部分ノ兩側ニ稍淡綠色ノ半透明ナル細キ縁ヲ取レル如ク成レリ;是レ胞囊ノ大ニシテ太ク且長キカ爲ナリ.

三重縣志摩郡田德島ノ如キ眞珠養殖場ニテハ此植物ノ蕃



殖シタルヨリ又ハ波浪等ニテ其處ニ吹キ集メラレタルヨリ此海藻ノ多量ナルトキハ宛モ繩ヲ蟠延シタル如ク眞珠介ノ上ニ積ミ集ルニ因リ介ヲ窒息セシムルガ爲メ大ナル損害ヲナスコトアリト云フ。此植物ハ斯ノ如ク切レテ流ル、トモ容易ニ死セサルモノ、如シ。

予ハ囊ニ日本藻類名彙 p. 189 ニ本種ヲ *cod. divaricatum* ト同一物トナシ其植物ノ上部ヲ以テ本種ノ體形ナリトシタレトモ此ハ予ノ誤ニシテ今之ヲ訂シ各別種トセリ。

第CXXI圖版。 1: ながみる, *Codium cylindricum* Holm. ノ體ノ上部, 1.—2: 全體ヲ縮小シテ略圖シタルモノ; α , 下部—3: 上部ノ枝ノ表面ニシテ胞囊ノ大ナルヲ示ス, 1.—4: 三個ノ幼體, 1.—5—6: 幼キ胞囊, $\frac{5.1}{1}$; 一ハ 736μ 長ク, 272μ 太シ; 一ハ 700μ 長ク, 345μ 太シ.—7: ガメート囊ヲ有スル胞囊, 909μ 太シ, $\frac{1.2}{1}$.—8: ガメート囊及無色ノ毛ノ落チタル痕ヲ有スル胞囊; 長サ 2 mm. , 太サ 290μ ; $\frac{5.4}{1}$.—9—11: ガメート囊ノ種々ノ形狀, $\frac{9.1}{1}$.

Codium latum Sur

Nom. Jap.: *Hira-miru*.

PL. CXLII.

Codium latum Sur. Alg. Jap. p. 22, t. VII.—*C. Lindenbergii* (non Binder) Hariot Liste d. Alg. Marines rapp. de Yokoska p. 216.

Fronde flat, elongated, broadly expanded, lanceolate or band-



Codium latum Suring. ひらみる

like, simple or once or twice sometimes thrice forked or divided mostly in lower part, rarely proliferated profusely from the surface near the base of frond, as shown in the fig. 2. The frond arises from fleshy conical disc with a short thick tereti-compressed stem, expanding into cuneate or broadly rounded sometimes reniform base, with flat and entire margin, ending in simple obtuse or ligulate or sometimes bifid apices. The plants attain usually the length of 50–60 cm. in the breadth of 20–30 cm. and with the thickness of 1–2 mm. in the upper portion much more thick in the lower basal portion. The largest one ever I have got measured 2 m. by 13 cm. *Utriculi* cylindrical, often, slightly enlarged at top into roundish knob with thin apical wall, 400–600 μ long, 50–100 μ thick, (the thickest 166 μ), mostly 6–9 times as long as broad. Gametangia are produced in a few numbers somewhat below the middle portion of an utriculus, oblong or elongato-ovate, 135–150 μ by 56–75 μ . *Colour* bluish green. *Substance* felt-like and rather closely adheres to paper in drying.

Hab.: On rocks covered with sand, in open sea-shores, extending from low tide to deeper places (10 fathoms). Provs. Iki, Tosa, Shima, Mikawa, Tōtōmi, Suruga, Idzu, Sagami and Boshyu.

PL. CXLII. Fig. 1: young fronds of *Codium latum* Sur., $\frac{1}{1}$.—Fig. 2: basal portion of a frond bearing abundant proliferations, $\frac{1}{1}$.—Fig. 3: young utriculi, $\frac{54}{1}$.—Fig. 4: colorless hair, $\frac{54}{1}$.—Fig. 5–7: gametangia-bearing utriculi, $\frac{91}{1}$.—Fig. 8: very long utriculus, $\frac{91}{1}$.

Codium latum Sur.

ひらみる.

第 CXLII 圖版.

體ハ扁平ニシテ長ク、廣ク開張シ、披針狀又ハ「バンド」狀ニシテ、單條又ハ下部ニ於テ1-2回、時ニ3回分叉シ又ハ分裂シ、第2圖ニ示シタル如ク體ノ下部ノ表面ヨリ澤山ニ枝ヲ副出スルコトハ稀ナリトス。體ハ多肉ナル圓錐狀ノ盤狀根ヨリ短キ太キ扁圓ノ莖ヲ以テ立チ、基部楔形又ハ廣ク圓ク若クハ稍腎臟形ヲナシ、縁邊ハ平坦ニシテ全縁ナリ、頂端鈍圓又ハ時ニ二裂ス。體ハ概子長サ50-60 cm. ニシテ幅20-30 cm. ヲ有シ、厚サ上部ニテハ1-2 mm. アリ下部ニテハ一層厚シ。予ノ嘗テ得タル標品ノ最モ大ナルモノハ2 m ニシテ幅13 cm アリ。胞囊ハ圓柱狀ニシテ、頂端往々少シク膨大シテ圓ク、頂壁薄ク、400-600 μ 長ク、50-100 μ 太シ(最モ太キモノニテ166 μ)大抵太サノ6-9倍長シ。「ガメート」囊ハ胞囊ノ中央部ノ少シク下ノ處ニ僅ニ生シ、長橢圓形又ハ橢圓狀卵形ニシテ、長サ135-150 μ 、幅50-75 μ アリ。色ハ青味アル綠色ナリ。質ハ羅紗ノ如クニシテ乾燥スルトキハ可ナリ密ニ紙ニ附着ス。

產地：外海ニ面スル沿岸ノ砂ヲ以テ蔽ハシタル岩石ニ在リ；低潮線ヨリ十尋内外ノ深サニ達ス。壹岐勝本(10尋)、土佐、志摩濱島、參河伊良湖岬、遠江、駿河、伊豆下田、伊豆大島、相模江ノ島、三崎、房州根本。

第 CXLII 圖版。1: ひらみる, *Codium latum* Sur. ノ幼キ體, $\frac{1}{1}$ —2: 體ノ下部ヨリ異常ニ澤山ノ副枝ヲ生ジタルモノ, $\frac{1}{1}$ —3: 幼キ胞囊, $\frac{54}{1}$ —4: 毛狀體, $\frac{54}{1}$ —5-7: ガメート囊ヲ有スル胞囊, $\frac{91}{1}$ —8: 甚ダ長キ胞囊, $\frac{91}{1}$ 。



Chordaria firma E. S. Gepp.

Nom. Jap.: *Ishi-modzuku*.

PL. CXLIII, CXLV, Fig. 1-9.

Chordaria firma E. S. Gepp. Chinese Mar. Alg. (Journ. of Botany Vol. 42, 1904) p. 162, Tab. 460, fig. 7,8).

Solitary or a few fronds tufted rising from a scutate disc, filiform or cylindrical when old, provided with a more or less traceable percurrent stem, 20-30 cm. high, 1 mm. or more thick. Branches arise laterally on all sides in an irregularly alternate manner from near the base, elongated and are provided with lesser sorts of the second or third orders. The ramification is in some fronds more regularly alternate, in others more irregular between alternate and dichotomous. In some fronds branches of the first order arise very near to each other, in others more distantly. In some especially in younger ones, branches are much loaded with ramelli, while in others, mostly in older ones they become naked. The axils are widely parted or almost horizontal and the branches are somewhat flexuose. In younger ones branches are soft and pliable, but become coriaceous when old.

The frond is hollow with a small cavity in the centre. The axile cylinder consists of two layers of densely compacted cells; the inner layer, of elongated cylindrical cells; the outer of radially disposed short roundish-angular ones. Thus there is a more or less broad band of short irregular cells between the long central ones and the cortical fringe of assimilatory filaments. This sub-cortical layer is composed of more or less thick walled cells which, in a transverse section of the frond appear radially elon-

gated or roundish and narrower than the central cells. In a longitudinal section they are seen to be short and irregular, and they form a distinct broad sheath enclosing the long internal cells in older portion of frond. In younger part the subcortical layer consists of only one or two layers of short irregular cells. The long internal cells of the frond are all of much the same diameter, and a transverse section shows them to be much more regular than those of *Chordaria flagelliformis* PL. XC. All the cell-walls of the axile cylindre are thick and show distinct pits, but those of the subcortical layer are somewhat thicker than the central ones. By the decaying of the central elongated cells a large cavity is sometimes produced. The assimilatory filaments are as usual as in the Chordarian plants; some irregularities are observed in its branching as shown in the fig. 10-11. The frond is firm and tough and a little gelatinous in well grown plant, but in some soft and more gelatinous, especially in younger ones. The firmer fronds do not adhere to paper when dried but softer ones closely. Colour yellowish brown turning to black when dried.

Hab.: On rocks between tide marks extending to 1-2 fathoms. Amakusa Isl., Provs. Iyo, Awa and Ise; Saku-no-shima (Prov. Mikawa), Provs. Ril ~~Sen~~, Rikuchū, and Rikuoku; Provs. Idzumo, Wakasa, Noto, Yechigo, and Sado; Mashike (Hokkaido); Karufō (Chosen).

The present plant is most nearly related to *Chordaria flagelliformis* Ag. in the substance and external appearance; but it differs from the latter in being more or less distinctly tubular and possessing a broad band of subcortical cells. In the latter the longitudinal cells are of irregular size while in the present plant

they are almost uniform. From *Chordaria Cladosiphon* Kg. p. 166, Pl., CXLIV, the present plant may be distinguished by firm and coriaceous substance (in older fronds and older portions of a frond), by alternate mode of branching, by densely compacted strata and by having more or less thick subcortical sheath.

PL. CXLIII. Fig. 1: two fronds of *Chordaria firma* E. S. Gepp from Prov. Sado, July, $\frac{1}{1}$.—Fig. 2: frond of the same from Ōshima, Prov. Rikuzen, August, $\frac{1}{1}$.—Fig. 3: one of main branches from a frond get from Furuta, Prov. Mikawa, $\frac{1}{1}$.—Fig. 4: growing apex of frond (dried specimen), $\frac{340}{1}$.—Fig. 5: cross-section of an older portion of frond showing the cells of central and subcortical layers (alcohol), $\frac{91}{1}$.—Fig. 6: longitudinal section of the same portion as fig. 5 (alcohol), $\frac{91}{1}$.—Fig. 7: central portion of fig. 5 magd. to show the cells of central layer and subcortical sheath and the connecting pits of longitudinal cells, α , α , as well as central cavity ϵ , ϵ , (alcohol), $\frac{175}{1}$.—Fig. 8: cross-section of a younger branch of another frond, $\frac{42}{1}$.—Fig. 9: portion of the same, $\frac{42}{1}$.

PL. CXLV. Fig. 1: part of a cross-section of the upper portion of frond, same as that figured in PL. CXLIII, fig. 5, showing minute cavity, l , (alcohol), $\frac{220}{1}$.—Fig. 2: cross-section of central and subcortical layers of older portion of frond showing very small cavities, appearing as if almost solid, (alcohol), $\frac{91}{1}$.—Fig. 3: longitudinal section of upper portion of frond, (alcohol), $\frac{220}{1}$.—Fig. 4: longitudinal section of the frond shown in fig. 7, (dried), $\frac{220}{1}$.—Fig. 5: portions of longitudinal cells of the frond shown in fig. 3 showing pits, $\frac{390}{1}$.—Fig. 6: sporangia $\frac{390}{1}$.—Fig. 7: cross-section of frond showing a large hollow cavity, (dried), $\frac{22}{1}$.—Fig. 8: portion of the same as fig. 7, $\frac{220}{1}$.—Fig. 9: the same as fig. 8,

magd. $\frac{300}{1}$. Fig.—10-11: irregularities of assimilatory filaments;
10: $\frac{200}{1}$; 11: $\frac{300}{1}$.

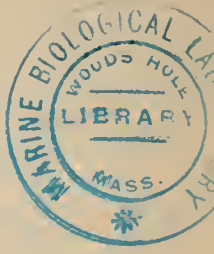
Chordaria firma E. S. Gepp.

いしもづく 岡村 稱

第CXLIII圖版;第CXLV圖版, 1-9圖.

單獨又ハ數個相集リテ扁平ノ盤狀根ヨリ立ち, 絲狀又ハ老成スルトキハ圓柱狀ヲナシ, 多少辿リ得ベキ軸ヲ存ス, 高サ20-30 cm., 太サ1 mm. 若クハ稍太シ. 枝ハ基部ニ近キ所ヨリ不規則ニ互生シテ各方面ニ出デ, 長ク, 更ニ2-3回分岐シテ漸次小形トナル. 枝ハ或標本ニテハ正シク互生スルコトアリ, 又他ノモノニテハ不規則ニシテ互生ト又狀トノ中間ナルコトアリ. 又或モノニテハ第一位ノ枝ハ互ニ相近ク接シテ出ルコトアリ又離ル、コトモアリ. 或標本殊ニ幼者ニテハ小枝ノ多キコトアレドモ他ノモノ, 殊ニ老成セルモノ, ニテハ枝ハ小枝ヲ失ヒテ裸トナル. 腋ハ廣ク開キ或ハ殆ド水平ニ近ク, 枝ハ稍雁木狀ニ屈曲ス. 幼キモノニテハ枝ハ軟クシテ水ニ從テ流ル、如クナレドモ老成スルトキハ硬變ス.

體ハ中心ニ小サキ腔所ヲ存シテ中空ナリ. 體ハ軸部組織ト類化絲トヨリ成リ, 軸部組織ハ二層ノ密ニ結合セル細胞ヨリ成ル; 其内層ハ長キ圓柱狀ノ細胞ヨリ成リ, 外層ハ放射狀ニ配置セル短キ圓形—多角形ノ細胞ヨリ成ル. 故ニ内層ノ長キ髓部細胞ト皮層タル類化絲層トノ間ニ短キ不規則ナル細胞ニテ成レル多少厚キ層アル理ナリ. 此皮下層ハ多少厚キ膜ノ細胞ヨリ成リ, 體ノ横斷面ニテハ放射狀ニ長ク又ハ圓クシ



テ髓部ノ細胞ヨリハ稍細キモノ、如シ。縦断面ニテハ此層ノ細胞ハ短クシテ不規則ノ形狀ヲナシ、體ノ老成部ニテハ長キ髓部細胞ヲ圍繞スル明ナル鞘ノ如キ觀アリ。幼キ部分ニテハ皮下層ハ一層乃至二層ノ短キ不規則ナル細胞ヨリ成ル。髓部ノ長キ細胞ハ總テ同様ノ直徑ヲ有シ横断面ニテハ *Chordaria flagelliformis* (第XC圖版)ノ髓部細胞ヨリ遙ニ規則正シク見ユ。軸部組織ノ細胞ハ總テ其膜厚クシテ明ニ連絡點ヲ見ルベシ、然レドモ皮下層ノ細胞ハ髓層ノモノヨリ幾分厚キノ觀アリ。髓層細胞ノ腐朽ニヨリ時ニ大ナル腔所ヲ成スモノアリ。類化絲ハ此屬ノ植物ニ通有ナル構造ヲ存ス、然レドモ第IO-II圖ニ示ス如ク異常ニ分歧スルモノナドアリ。體ハ老成シタルモノニアリテハ硬クシテ僅ニ粘質ヲ存スルニ過ギザレドモ或モノニテハ柔軟ニシテ一倍粘質ニ富ム、殊ニ幼者ニ於テ然リ。其硬キモノハ乾燥スルニ當テ紙ニ附着セザレドモ軟カキモノハ密着ス。色ハ黃褐色ニシテ乾燥スルトキハ黑色トナル。

產地：潮線間ヨリ1-2尋ノ岩石ニアリ。天草島野釜島；伊豫和氣濱及新濱(中錦氏)、阿波日和佐、及鳴門、伊勢；三河佐久島(名倉氏)、磐井岬(陸前)；宮古(山田玄氏)、陸奥大間及北金ヶ澤(東氏)出雲、岩狹、能登羽咋及小口峽；越後寺泊及佐渡相川竝ニ眞野村(中村正雄)、粟生島(越後)、北海道増毛；朝鮮葛島。

本種ハ其體質及外形ニ於テ *Chordaria flagelliformis* Ag. ト極メテ酷似ス、然レドモ其多少中空ナルト多少厚キ皮下層ヲ有スルトニ依リテ之ト異ナリトス。該種ニアリテハ縦走セル細胞ハ大小不規則ナレドモ本種ニテハ殆ト同一ナリ。又 *Chordaria Cladosiphon*, くさもづく, 第CXLIV圖版, トハ質ノ硬クシテ粗剛ナルコト(老成セル體及體ノ老成部ニ於テ)、枝ノ互生ナル

コト,組織ノ密ナルコト及多少厚キ皮下層ノ鞘狀層ヲ有スル
コトニヨリテ異ナリトス.

第CXLIII圖版. 1: いしもづく, *Chordaria firma* E. S. Gepp., ノ
二標品,佐渡相川七月産, $\frac{1}{1}$.—2: 陸前大島産,八月, $\frac{1}{1}$.—3: 三河渥
美郡古田産ノ大ナル體ノ枝, $\frac{1}{1}$.—4: 成長點(乾燥標品ヨリ,三河
古田産), $\frac{310}{1}$.—5: 老成部ノ横斷面ノ一部,中心部ト皮下鞘層
トヲ示ス(alcohol品), $\frac{91}{1}$.—6: 5圖ノモノト同一部ノ縦斷面, (alco-
hol), $\frac{91}{1}$.—7: 5圖ノモノト同一部ノ横斷面ノ中心部(a,a)ト皮下
層ノ細胞ノ一部;連絡點ヲ示ス;c,空所, (alcohol) $\frac{175}{1}$.—8: 幼キ部
ノ横斷面(alcohol), $\frac{42}{1}$.—9: 同上ノ一部, $\frac{42}{1}$.

第CXLV圖版. 1: 第CLXIII圖版5圖ニ示シタルト同一體ノ
上部ノ横斷面ノ一部ニシテ小サキ空所,cヲ示ス(alcohol品), $\frac{220}{1}$.
—2: 老成部ノ中心部ト皮下層部トヲ示ス横斷面ニシテ,殆ド
實質ナル如キ小ナル空所ヲ有スルヲ示ス, (alcohol品), $\frac{91}{1}$.—3: 體
ノ上部ノ細キ部分ノ縦斷面(alcohol), $\frac{220}{1}$.—4: 7ニ示シタルト同
一體ノ縦斷面(乾燥品), $\frac{220}{1}$.—5: 3圖ニ示シタル縦斷面ノ中心部
ノ細胞ノ連絡點ヲ示ス, $\frac{390}{1}$.—6: 游走子嚢(陸前大島産), $\frac{390}{1}$.—7:
三河産ノモノ、横斷面, (乾燥品), $\frac{22}{1}$.—8: 同上ノ一部, $\frac{220}{1}$.—9: 同
上ノ一部, $\frac{390}{1}$.—10-11: 類化絲ノ分岐セルモノ,又ハ一個細胞ヨ
リ二條ノ類化絲ヲ出セル等ノ異常ノモノ; 10: $\frac{220}{1}$; 11: $\frac{390}{1}$.

Chordaria Cladosiphon Kütz.

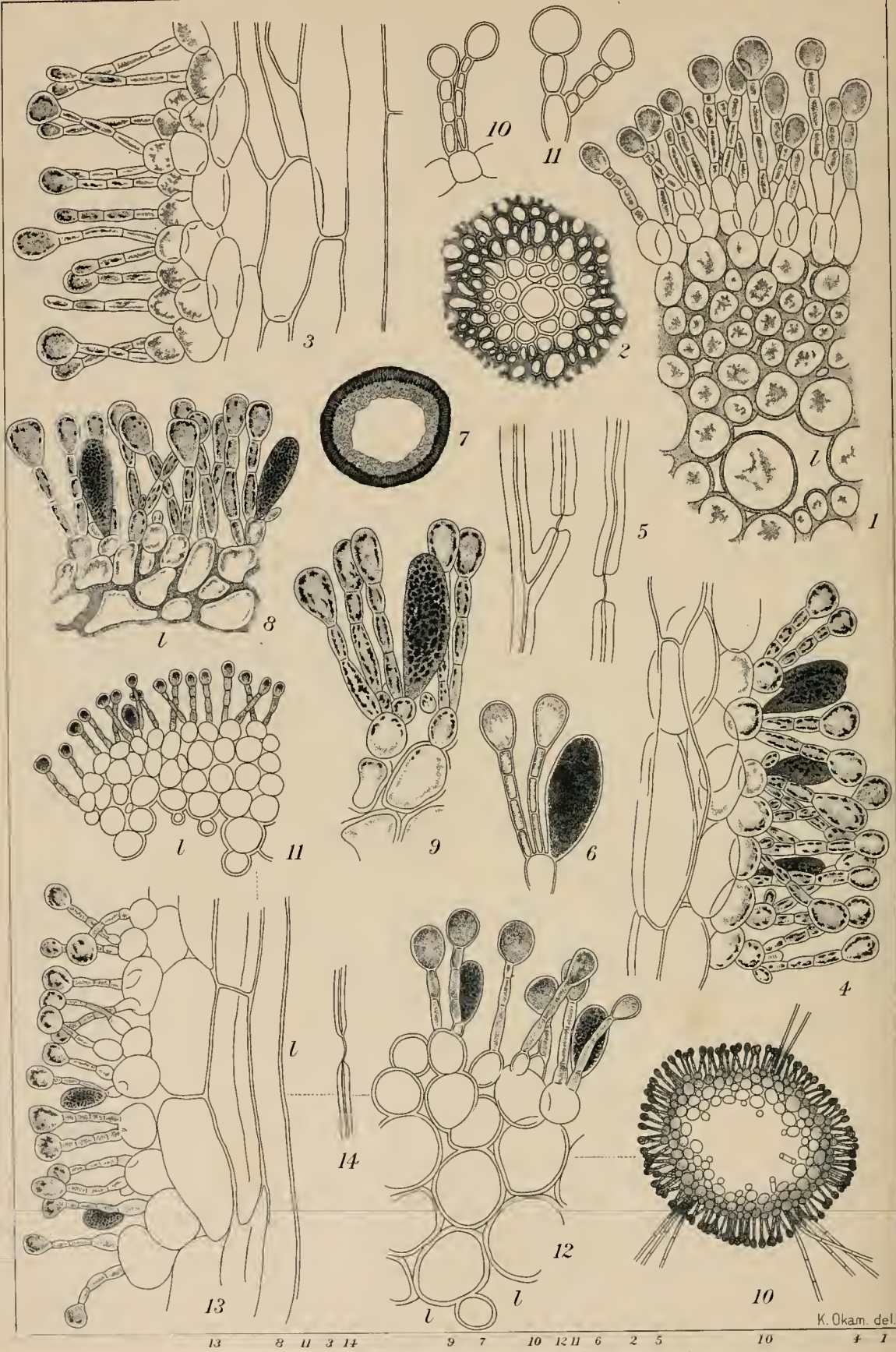
Nom. Jap: *Kusa-modzuku*.

PL. CXLIV; CXLV, Fig. 10-14.

Chordaria Cladosiphon Kütz. Tab. Phyc. IX, t. II, f. 2; J. Ag.



Chordaria Cladosiphon Kuetz. くさもつく.



Chordaria firma Gepp いしもづく Fig. 1-9.
Chordaria Cladosiphon Kuetz. くさもづく Fig. 10-14.

Till Alg. Syst. VI, p. 71; De Toni Syll. Alg. III, p. 433.—*Cladosiphon Chordaria* Harv. Phyc. Austr. tab. 60.

Root a small scutate disc. *Fronds* tufted, 20-40 cm high, 0.5-1.5 mm. or more in diameter, filiform when young, becoming thicker and cylindrical when old. Branches arise laterally on all sides at lower portion of frond, but upward dissolve more deliquescently and irregularly in dichotomo-alternate manner at longer or shorter intervals, with some scattered lateral segments, either bare of ramuli or with some of them, especially in younger fronds. Branches and branchlets soft and pliable, very widely diffused in various directions and slightly flexuose. The branches and their lesser divisions taper to slender apices and more or less narrowed toward their origin. In older fronds branches become usually naked or bare of ramuli and tapering of their basal portions is more manifest than those in younger frond. The frond is hollow from the beginning and the tube is very wide being more than one-third the diameter. The axile cylinder is formed of rather loosely compacted longitudinal cells with wide calibres having many intercellular spaces. The wall of the longitudinal cells is slightly thickened and shows distinct pits. Along the inner side of the axile cylinder there are a few scattered cylindrical cells with narrow diameters. From the outer roundish cells of the axile cylinder assimilatory filaments and hair-tufts arise. The assimilatory filaments consist of 3-4 subcylindrical cells of which the terminal one is obovate or roundish. *Zoosporangia* are carried at the basal joints of assimilatory filaments, oblong or elliptico-oblong. The *substance* is soft and membranous, very gelatinous, but the cross-section of dried frond extends with elasticity; the plant closely

adheres to paper in drying. *Colour* yellow brown, turning to blackish in drying.

Hab.: On fronds of several plants such as *Sargassum*, *Phyllospadix* etc, rarely on stone (?), extending from tide marks to 1-2 fathoms. Provs. Awa, Mikawa, Rikuzen, Rikuoku, Noto, Sado and Kitami; Seishin (Chosen).

On referring the plant in question to the present species, I have not been able to see any reliable specimens. But from the illustrations given by Harvey in *Phyc. Austr.* tab. 60, and the descriptions given by him and J. Agardh, I think I am justified in doing so. Harvey states that the plant has a percurrent stem, but J. Agardh that it branches deliquescently. Again, Harvey mentions that the axile cylinder is formed of very densely compacted and agglutinated longitudinal filaments exactly as in *Chordaria* and J. Agardh that "cellulis exigua distantia juxtaposis ambitu rotundatis, amplioribus et fere duplo tenuioribus sine ordine adparente intermixtis." These statements are somewhat at variance with ours, though in our plants all of the longitudinal cells are not of exactly equal diameter and some have narrow calibres, yet the cross-section of frond shows them to be much more regular than that of *C. flagelliformis* and to be much loosely packed together.

The near allies among our plant is *Ch. firma* PL. CXLIII from which it differs in many points especially in the soft substance, mode of branching, habit of growing on algae instead of on stone and structure of frond. Though by those differences the two plants are easily distinguishable from each other, yet in some cases there are some specimens very difficult to separate one from the other. In different localities and ages the plant much varies in

size, diameter and ramification. In some, branches are more alternately disposed, in others more dichotomous; some have loose and barren branches, others densely ramellosed. By such variations some samples show a remarkable external resemblance with *Cladosiphon decipiens* PL. LXXXIX.

PL. CXLIV. Fig. 1: matured [frond of *Chordaria Cladosiphon* Kuetz., 1.—Fig. 2: portion of an older frond, 1.—Fig. 3: young frond, 1.—Fig. 4: growing apex of frond, (alcohol), $\frac{600}{1}$.

PL. CXLV, Fig. 10-14. Flg. 10: cross-section of frond, $\frac{54}{1}$; —Fig. 11: portion of the same; $\frac{1}{1}$ inner cavity; $\frac{21}{1}$.—Fig. 12: cross-section of frond bearing sporangia; $\frac{1}{1}$ inner cavity; $\frac{220}{1}$.—Fig. 13: longitudinal section of frond; $\frac{175}{1}$ inner cavity. —Fig. 14: pit on longitudinal cell-wall, $\frac{390}{1}$. (All from alcohol specimens).

Chordaria Cladosiphon Kuetz.

第 CXLIV—CXLV 圖版, 10-14 圖.

くさもづく 岡村稱(方言もづく).

根ハ小吸盤狀ナリ。體ハ叢生シ, 20-40 cm. 高ク, 0.5-1.5 mm. 太ク或ハ尙太シ, 幼時ハ絲狀ニシテ老成スルトキハ太ク且圓柱狀トナル。枝ハ體ノ下部ニ於テ各方面ニ出レドモ上方ニハ漸次不明トナリテ, 叉狀トモナク互生トモナク, 不規則ニ分岐シ, 或ハ長距離ニ或ハ短距離ニ出デ, 處々ニ側枝ヲ出シ, 時ニ小枝ナク時ニ小枝多シ, 殊ニ幼者ニハ然リトス。枝及小枝ハ柔軟ニシテ水ニ隨テ流ル、ガ如ク, 極メテ廣ク各方面ニ開キ少シク壓木狀ニ屈曲ス。枝及小枝ハ頂端細ク基部ノ方ニ多少狹細ナリ老成セル體ニ在リテハ枝ハ通常小枝少ナク, 其基

部ノ細キコトモ幼者ニ於ケルヨリ一層明ナリ。體ハ初ヨリ中空ニシテ内腔ハ甚ダ廣ク其直徑ハ枝ノ直徑ノ三分ノ一ヨリ大ナリ。體ハ稍緩ク密集セル長キ縦ノ細胞ヨリ成リ、其細胞ハ太クシテ多數ノ細胞間隙ヲ存ス、此細胞即チ體ノ軸組織ヲナス。縦ノ細胞ノ膜ハ少シク増厚シ明ニ連絡點ヲ存ス。内腔ノ周圍ニ其處此處ニ數個ノ細キ圓柱狀細胞アリ。軸組織ノ外部ニ在ル圓キ細胞ヨリ類化絲ト毛叢トヲ生ズ。類化絲ハ3-4個ノ稍圓柱狀ノ細胞ヨリ成リ其頂端ノモノハ倒卵形又ハ圓形ナリ。子囊ハ類化絲ノ基部ノ細胞ニ附着シ、長橢圓形又ハ橢圓形ナリ。質ハ柔軟ニシテ膜質、甚シク粘質ニ富ム、然レドモ乾燥シタル體ノ横斷面ハ彈力性ヲ以テ膨脹ス；體ハ乾燥スルトキハ密ニ紙ニ附着ス。色黃褐色、乾燥スルトキハ黑色トナル。

產地：潮線間ヨリ1-2尋ノ處ニ在ルほんだわら、もしほぐさ、すがも等ノ藻ノ上ニアリ（稀ニ石上？ニ在リ）。徳島；三河渥美郡中山村、古田、江比間（以上名倉氏、石上？）、及篠島、陸前牡鹿郡小網倉、大原及磐井岬；陸奥岩尾村及下北郡蛇浦（東氏）、能登羽咋、佐渡大浦（岡村）、同加茂村梅津（中村氏）、北見猿澗湖（3-5尺）；朝鮮清津（脇谷氏）。

分布：ニウフホルランド。

本植物ヲ此種ニ當ツルニ就テハーモ信用シ得ベキ標品ヲ參考スル能ハザリシト雖モ Harvey ノ Phyc. Austr. ニ掲タル圖及其記載ト、J. Agardh ノ記載トニ依テ予ハ斯クシテ誤ナシト信ズ。Harvey ハ本植物ニ一條ノ縦貫セル莖アリト記シ、J. Agardh ハ漸次枝ト區別スベカラザルニ至ルト記セリ。又 Harvey ハ軸組織ハ甚ダ緻密ニ集リテ互ニ密着シタル縦ノ絲狀細胞ヨリ成ルコト全ク Chordaria (氏ノ意ハ Ch. flagelliformis ヲ指スモノ、

如シ)ノ如シト記シ, J. Agardh ハ“細胞ハ僅ニ離レテ互ニ接着シ, 圓ク, 太キモノト其二分ノ一ホド細キモノト特ニ明ナル順序ナク混在スト”記セリ. 此等ノ記載ハ幾分子輩ノモノト異ナル處アリ; 尤モ予輩ノモノト雖モ縦ノ細胞ハ悉ク皆同一ノ太サニハアラデ或ハ細キモノアリト雖モ體ノ横斷面ハ *Ch. flagelliformis* (第 XC 圖版)ノ如ク太キト細キト明ニ混在スルガ如ク不規則ナラズシテ又其ノ如ク緻密ナラズ.

本邦産ノ種類中本種ニ近親ノ類ヲ索メバ *Ch. firma*, いしもづく, 第 CXLIII 圖版, ノ外アラザレドモ, 本種ハ其柔軟ナル體質ト分枝ノ容子, 藻ノ上ニ附着スルコト及體ノ構造トニヨリテ之ト異ナリトス. 此等ノ點ヲ以テ二者ヲ分ツ事容易ナリト雖モ, 然モ或場合ニハ, 甚シク相類スルモノアリテ之ヲ分ツコト容易ナラザルモノアリ. 而シテ産スル場所ノ差異及年齡等ニヨリテ體ノ大サ, 太サ, 及ビ枝態ニ相違アルヲ以テ或標本ハ一層互生ノ枝ヲ有シ, 或モノハ一層叉狀ヲ呈スルコトアリ, 又或モノハ小枝少ナク或モノハ甚ダ多キモノナドアリ. 斯ノ如ク變化アルヲ以テ時ニハ *Cladosiphon decipiens*, 真正ノもづく, 第 LXXXIX 圖版, ト外形ノ酷似スルモノアリ.

第 CXLIV 圖版. 1: *Chordaria Cladosiphon* Kuetz., くさもづく, ノ成長セルモノ, $\frac{1}{1}$.—2: 老成セルモノ、一部(蛇浦産), $\frac{1}{1}$.—3: 幼者(羽咋, 五月), $\frac{1}{1}$.—4: 成長點(alcohol 品), $\frac{600}{1}$.

第 CXLV 圖版, 10-14 圖. 10: 體ノ横斷面, $\frac{54}{1}$.—11: 同上ノ一部; $\frac{91}{1}$ 内腔.—12: 子囊ヲ有スル體ノ横斷面; $\frac{220}{1}$ 内腔.—13: 縦斷面; $\frac{175}{1}$ 内腔.—14: 縦ノ膜ニアル連絡點, $\frac{300}{1}$.



K Okam del

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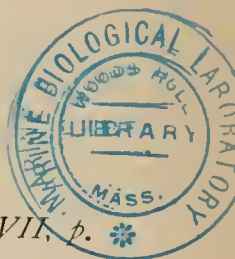
18

Gelidium crinale (Turn) Lamour. いとてんぐさ Fig. 1-10.
Herposiphonia subdisticha Okam. くらひめごけ Fig. 11-18.

Gelidium crinale (Turn.) Lam.

Nom. Jap.: *Itotengusa*.

PL, CXLVI, Fig. 1-10.



Gelidium crinale (Turn.) Lam. in *Bory Dict. Class vol. VII*, p. 191 (Bornet Les Algues de Schousboe p. 267); *J. Ag. Epic.* p. 546; Hauck Meeresalg. p. 192 (*a* et *β*); Ardiss. Phyc. Medit., I, p. 290; De Toni Syll. Alg., V, p. 146.—*G. corneum* var. *crinale* (C. Ag.) J. Ag. Sp. II, p. 470.—*Fucus crinalis* Turn. Hist. Fuci tab. 198.—*Acrocarpus crinalis* Kuetz. Sp. Alg. p. 761, Phyc. Gener. p. 405, Tab. Phyc. XVIII, t. 33, f. a-c.—*Acrocarpus lubricus* Kuetz. Phyc. Gener. p. 405, t. 60, f. II, Sp. Alg. p. 761, Tab. Phyc. XVIII, t. 320, f. d-k.—*A. spinescens* Kuetz. Phyc. Gener. p. 405, Sp. Alg. p. 761, Tab. Phyc. XVIII, t. 33, f. d-e.

Root a very small callous disc, throwing out numerous cylindrical creeping branched fibres, variously matted together and rising at length into new fronds. *Fronds* numerous from the same base, growing in thick tufts, 4-5 cm. high, cylindrical or compressed, 200-500 μ broad, of almost equal thickness throughout, erect, but often incurved and somewhat entangled, mostly naked below, and branched upward with 2-3 sometimes 4 or more branchlets from same place so as to appear like clustered, with branches of the next order similarly loaded in turn; besides a few ramuli are irregularly scattered along the branches. Branches are patent and blunt or pointed at apex. Tetraspores collected in the extremities of the branches which swell in lanceolate or spatulate manner or in somewhat expanded portions beneath apex.

PL. CXLVI—CL., September 1915.

Correction: *Paging* of No. IX. should be corrected to begin in 177 and to end in 194 instead of 155 and 172.

Hab.: On stones in sandy beach below low tide in calm waters. Ōno and Furumi (Prov. Owari, Narita), Gamagōri (Prov. Mikawa, Narita).

The plant described above very much resembles the illustrations given in Turn. Fuci Tab. 198 and Kuetz. Tab. Phyc. XVIII, Tab. 33 f. d-e and seems to be taken as *f. typica i. e. f. genuinum* Huck l.c. p. 193.

Among our plants there are smaller forms which at a glance very much resemble *Acrocarpus lubricus* Kuetz. Tab. Phyc. XVIII, Taf. 32, f. d-k. It may be described as follows:

Frond dwarf 1-1.5 cm. high, erect, standing from creeping stem, simple or here and there with short ramuli, with some of branches a little elongated and furnished with patent and sharpish ramuli arranged in pinnate or subsecund manner at short intervals. Tetrasporangia in lanceolate apex of ramuli.

Hab.: Probably same as *f. genuinum*. Miyazaki, near Gamagōri Prov. Mikawa (Nagura).

On making comparison with a small specimen¹⁾ of Naples from Herb. H.W. Buek, which has Kuetzing's handwriting of *Sphaerococcus lubricus* Kuetz., our plant somewhat differs from it by being rather weak and more flattened and much ramellose. But as the present species much varies in habit I think it better to consider this form as identical with *f. lubricum* of the Mediterranean.

Pl. CXLVI, Fig. 1: two fronds of *Gelidium crinale* (Turn.) J. Ag. *f. lubricum* Hauck, $\frac{1}{1}$.—Fig. 2: frond of *f. genuinum* Huck. $\frac{1}{1}$.—Fig. 3: two branches of the same detached, $\frac{1}{1}$.—Fig. 4:

1) This specimen is kept in my herbarium through the kindness of Mr. Reinbold.

tetrasporic branch of *f. lubricum*, $\frac{13}{1}$.—Fig. 5-7: three branches of *f. genuinum* bearing tetraspores; 5-6, $\frac{10}{1}$, 7: $\frac{7}{1}$.—Fig. 8: cross sections of branches, slightly magd.—Fig. 10: portion of a cross section, highly magd.

Gelidium crinale (Turn.) Lam.

いとてんぐさ 成田 稔

第 CXLVI 圖版, 1-10 圖.

根ハ極メテ小ナル盤狀ニシテ匍匐スル圓柱狀ノ枝ヲ多數四方ニ發出シ其枝ハ更ニ枝ヲ分チテ錯綜シ、所々ヨリ直立スル體ヲ生ズ。體ハ同一ノ所ヨリ多數密叢シ、4-5 cm 高く、圓柱狀又ハ扁圓、200-500 μ 太ク、全部略ホ同一ノ太サニシテ直立ス、然レドモ往々屈曲シ、稍錯綜シ、下部概ネ枝ナク上部ハ同一ノ所ヨリ2-3又ハ時ニ四個以上ノ小枝ヲ出シ、恰モ集リテ出ル如ク見ユ、而シテ枝ハ又更ニ同様ニ分岐ス；其他枝ノ所々ニ小枝ヲ不規則ニ散生ス。枝ハ廣開シ枝端鈍圓又ハ尖銳ナリ。四分孢子囊ハ枝ノ上部ニ生シ、其部ハ披針狀又ハ莧狀ニ膨レ又ハ枝端ノ少シク下ノ處ノ稍展ガリタル所ニ生ズ。

產地：靜ナル灣ノ砂濱ノ礫上ニ生ジ低潮線附近乃至夫以下ノ岩石ニ在リ。尾張知多郡大野及古見村、三河蒲郡(成田)。

上ニ記載セル植物ハ Turner Fuci 第 198 圖版及 Kuetzing Tab. Phyc. XVIII, Taf. 33 f. d. e ニ圖示シタル所ト酷似スルヲ以テ *f. typica* 即チ Hauck ノ所謂 *f. genuinum* Hauck, l. c. p. 193 ナルベシト思惟ス。

又別ニ小サキ形體ノモノアリー見シタル所ニテハ *Acrocarpus lubricus* Kuetz. Tab. Phyc. XVIII, Taf. 32, f. d-k ニ類ス、即チ下ノ如シ。

體ハ矮小, 1-1.5 cm. 高ク, 匍匐スル莖ヨリ直立シ, 單條又ハ其處此處ニ短キ小枝ヲ存シ, 或枝ハ少シク伸長シ少距離ニ羽狀又ハ稍偏生スル小枝ヲ生シ小枝ハ廣開シ尖銳ナリ. 四分胞子囊ハ小枝ノ披針狀ヲナセル頂部ニ形成セラル.

產地: 上ニ同ジ; 三河幡豆郡宮崎(名倉).

分布: 地中海, アドリアチック, 太西洋歐洲及米國沿岸, 紅海(Assab 群島).

H. W. Buck 氏ノ所藏ニ係ル Naples ノ一標品ニシテ Kütz-
ing 氏ノ *Sphaerococcus lubricus* Kg. (=G. crinale f. *lubricum* Hauck) ト手
記シタルモノハ Reinbold 氏ヨリ贈ラレテ余ノ藏スル所ナリ.
今此標品ト予ノ上記ノ標品トヲ比較スルニ本邦ノモノハ稍軟
弱纖細ナルト夫ヨリモ幾分扁キト且又小枝多キトニ依テ之ト
異ナリトス. 然レドモ此種ハ其形狀極メテ變化シ易キモノ
ナルヲ以テ予ハ本邦産ノ此矮形ノモノヲ又地中海ニ産スル f.
lubricum ト同一ナリト考フルヲ至當ナリト思惟ス.

第 CXLVI 圖版. 1: いとてんぐさノ矮形品, *Gelidium crinale*
(Turn.) J. Ag. f. *lubricum* Hauck ノ二個體, $\frac{1}{1}$.—2: 同上ノ模範品,
f. *genuinum* Hauck ノ體, $\frac{1}{1}$.—3: 同上ノ二枝ヲ分離シタルモノ,
 $\frac{1}{1}$.—4: f. *lubricum* ノ四分胞子ヲ有スル枝, $\frac{13}{1}$.—5-7: f. *genuinum*
ノ四分胞子ヲ有スル三個ノ枝; 5-6: $\frac{10}{1}$; 7: $\frac{7}{1}$.—8: 枝ノ横斷面,
少シク廓大.—10: 横斷面ノ一部, 高度廓大.

***Herposiphonia subdisticha* Okam.**

Nom. Jap.: *Kuro-himé-goké*.

PL. CXLVI, Fig. 11—18.



Herposiphonia subdisticha Okam. Contr. to the Knowl. of the Mar. Alg. of Jap. III, (Bot. Mag. Tokyo Vol. XIII, 1899, no. 145 p. 37) Pl. I, f. 12—14.

“*Fronde*s filiform, almost cylindrical, about 1 cm. in length or less, about 217 μ in diameter, decumbent, adhering to substratum by emitting root-fibres from the lower surface. Root-fibres simple, elongated or remaining short, either ending with a blunt apex or expanding into a radiato-scutate disc, limited to the main branches, which are few and patent. ‘Langtriebe’ and ‘Kurztriebe’ are arranged in a subdistichous manner, lying on almost but not quite exactly on one and the same plane. While some ‘Kurztriebe’ arise from the dorsal side very slightly above the plane of ‘Langtriebe,’ there are others which stand on the same level with the latter. ‘Langtriebe’ spread out laterally with non-inrolled apex, and ‘Kurztriebe’ almost horizontally, while the latter standing near the growing portion of the shoot are incurved toward the apex of axis. The ‘Langtriebe’ stand on alternate sides at every fourth articulation, and the ‘Kurztriebe’ similarly arise from articulations devoid of the ‘Langtriebe.’ A ‘Langtrieb’ always stands directly above a ‘Kurztrieb’ on the same side. The latter is short, 500–600 μ long, 80–140 μ broad, somewhat cylindrico-oblong, tapering to a bluntish apex from an equally broad or slightly constricted base, carrying in its young state very short and minute deciduous fibrillae at the apex. Tetraspores are arranged in a straight line in a slightly expanded ‘Kurztrieb,’ 4 or

5 in number, externally covered by two outer cells of equal length. Frond is ecorticated throughout, furnished in the main branches with 11 pericentral tubes surrounding the central axis which has a wider calibre, and shows 4-5 tubes in surface view. Articulations about half as long as the diameter. Colour dark brownish red, almost blackish when dry."—Okam. *l.c.*

Hab.: On various algae such as *Gelidium*, *Amphiroa* etc. between tidemarks. Prov. Hyuga, Futae (Prov. Higo), Enoshima, Bōsyū.

Remarks. "Owing to the greater obscurity of the dorso-ventral arrangement of parts than in *Herposiphonia fissidentoides* Holmes, the present plant does not appear at first glance to be referable to this genus; but its regular arrangement of 'Langtriebe' and the formation of fruits in 'Kurztriebe' tell us its nature. The present plant which is very closely allied to *H. fissidentoides* differs from the latter in the narrow and non-leafy 'Krrztriebe.'—Okam. *l.c.*

Pl. CXLVI, Fig. 11-18. Fig. 11: fronds of *Herposiphonia subdisticha* Okam. in nat. state, $\frac{1}{1}$.—Fig. 12: frond detached from the substratum, $\frac{3}{1}$.—Fig. 13: growing apex of a "Langtrieb" presenting well-defined dorso-ventral character, viewed from under-surface that is ventral side, toward which bend the apices of all the young shoots; *a*, *b* stand on the other side opposite to that of *c*, *d*; $\frac{220}{1}$.—Fig. 14: cross-section of a "Langtrieb," $\frac{110}{1}$.—Fig. 15: cross-section of a "Kurztrieb," $\frac{220}{1}$.—Fig. 16: root disc, $\frac{220}{1}$.—Fig. 17: portion of frond bearing tetraspores, viewed from the upper that is dorsal side; all the apices of ramuli bend toward the under-surface, $\frac{48}{1}$.—Fig. 18: "Kurztrieb" bearing tetraspores; *d*, covering cells, $\frac{220}{1}$.

*Herposiphonia*¹⁾ *subdisticha* Okam.

くろひめごけ 岡村 稱

第 CXLVI 圖版, 11-18 圖.



體ハ絲狀, 略ボ圓柱狀, 長サ約 1 cm. 若クハ以下ニシテ, 徑約 217 μ アリ, 匍匐シ, 裏面ヨリ根ヲ出シテ他物ニ附着ス 根ハ單條ニシテ長ク或ハ短ク, 先端鈍頭又ハ圓盤狀ニ開張シ, 専ラ主枝ニ限ラレテ存ス, 主枝ハ僅少ニシテ廣開ス. 長條及短條ハ稍兩側ニ配列シ, 正確トニハアラザレドモ兩者殆ド同一ノ面上ニ在リ. 或短條枝ハ背側ヨリ出デ、長條ノ出ル平面ヨリ少シク上部ニアリト雖モ又他ノモノニ在リテハ長條ト全ク同一ノ面ヨリスルモアリ. 長條ハ左右ニ擴張シ, 頂端卷曲スルコトナク, 短條枝ハ殆ド水平ニ出ヅ, 然レドモ一ノ軸ノ成長點附近ヨリ出ル長條枝ハ其軸ノ先端ノ方ニ屈曲ス. 長條枝ハ各第四番目ノ節ニ於テ交互ノ側ヨリ出デ, 短條枝モ亦同様ニ長條枝ノ存セザル節ヨリ出ヅ. 長條枝ハ同一ノ側ニ於テハ常ニ短條枝ノ上ニ位ス. 短條枝ハ短クシテ, 長サ 500-600 μ , 幅 80-140 μ アリ, 稍圓柱狀—長楕圓形ニシテ, 基部少シククビレタルカ又ハクビレズシテ同様ノ幅ヲ有シ, 頂端少シク細リテ鈍頭ヲナス; 其幼時ニ於テハ頂端ニ極メテ短クシテ小ナル早落性ノ毛狀體ヲ存ス. 四分胞子ハ幾分展ガリタル短條枝ニ一直線ニ列シ, 4-5 個アリテ, 外部ハ同長ノ二個細胞ヲ以テ覆ハル. 體ハ全部皮層細胞ナク, 主枝ハ 11 個ノ周心細胞アリテ太キ中軸ヲ圍繞シ, 表面ヨリ其 4-5 條ヲ見ルベシ. 關節ノ長サハ直徑ノ約半分ナリ. 色ハ暗紅褐色ニシテ乾燥スルトキハ殆ド黑色トナル.

1) ひめごけ屬, *Herposiphonia* Naegeli, ノ性質ハ日本海藻圖說, 第一卷, 第一三頁ニ在リ.

產地：潮線間ニアルてんぐさ、かにのて、等種々ノ海藻ノ上ニ在リ；日向、天草二江、相模江ノ島、根本及白濱(房)。

備考：ひめごけ, *Herposiphonia fissidentoides* Holm. (日本海藻圖説、第一卷、第四圖版)ヨリモ各部腹背ノ性質甚ダ明ナラザルヲ以テ本種ハ一見シタル所ニテハ此屬ニ入ルベカラザルモノ、如シ；然レドモ其長條ノ配置ノ正シキト短條枝ニ實ヲ熟スルトハ此屬ノモノタルコトヲ示スト云フベシ。本種ハ *H. fissidentoides* Holm. ト最モ近キ類縁ヲ有スレドモ短條ノ細クシテ葉狀ナラザルヲ以テ之ト異ナリトス。

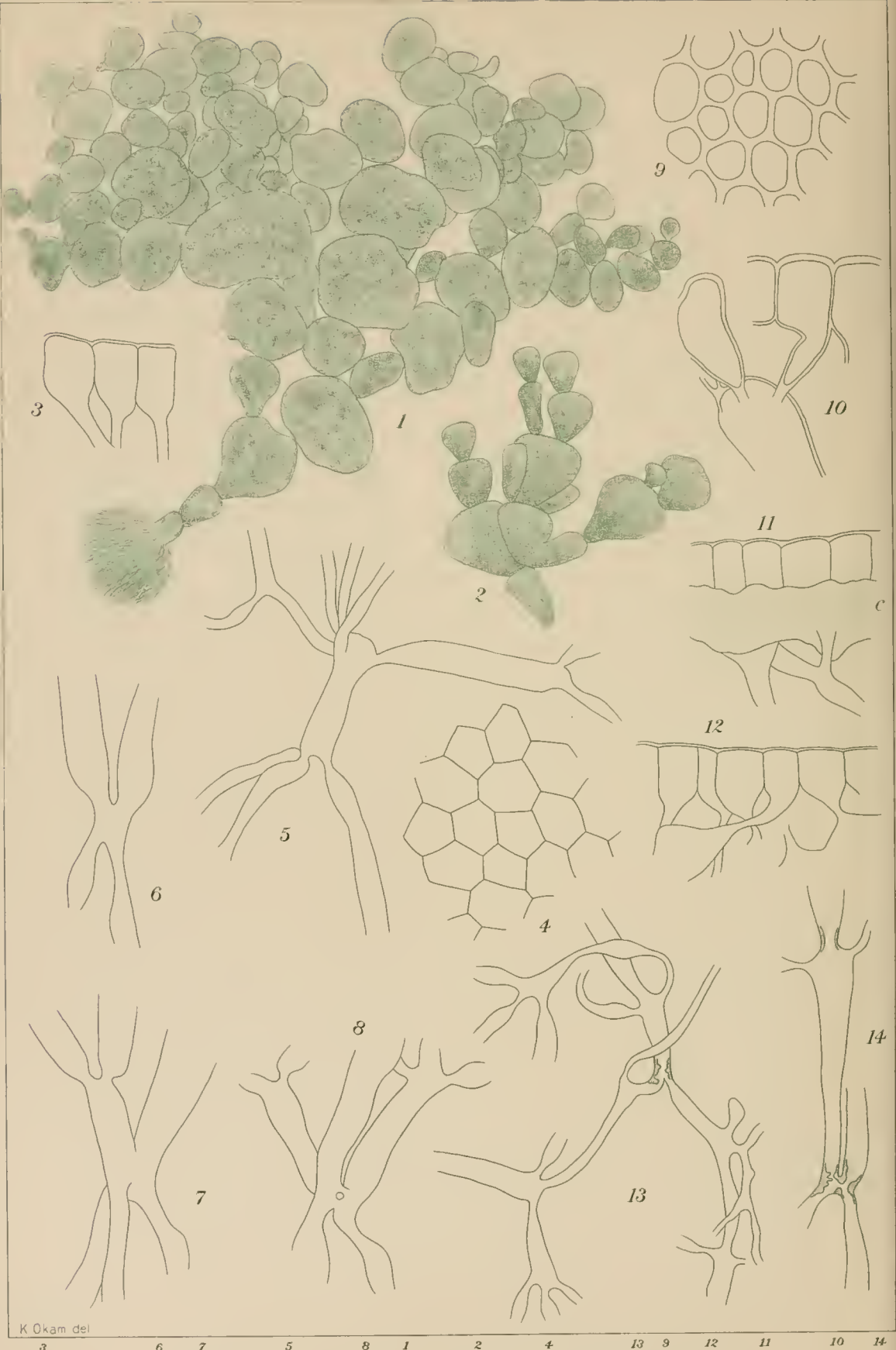
第 CXLVI 圖版, 11-18 圖. 11: くろひめごけ, *Herposiphonia subdisticha* Okam. ノ自然ノ狀態 $\frac{1}{1}$.—12: 附着物ヨリ離シタルモノ $\frac{3}{1}$.—13: 長條枝ノ成長點ニシテ明ニ腹背ノ性質ヲ顯ハシタルモノ、裏面即チ腹面ヨリ見ル；枝ハ總テ其頂端ヲ腹面ノ方ニ向ケタリ；a, b ハ c, d ト反對ノ側ヨリ出ル枝, $\frac{220}{1}$.—14: 長條ノ横斷面, $\frac{110}{1}$.—15: 短條ノ横斷面, $\frac{220}{1}$.—16: 根ノ盤狀部, $\frac{220}{1}$.—17: 背面即チ上面ヨリ見タル體ノ一部ニシテ四分胞子ヲ有スルモノ、小枝ハ總テ裏面即腹面ノ方ニ曲レリ, $\frac{48}{1}$.—18: 四分胞子ヲ有スル短條；d, ハ蓋細胞, $\frac{220}{1}$.

Halimeda cuneata Hering.

Nom. Jap.: *Uchiwa-saotengusa*.

PL. CXLVII.

Halimeda cuneata Hering. in Flora, 1846, p. 214; Barton The Gen. *Halimeda* p. 15, f. 7-14; Kuetz. Sp. Alg. p. 505 (non Tab.



Halimeda cuneata Hering. うちわさぼてんぐさ.

Phyc.); De Toni Syll. Alg. I, p. 526.—*H. obata* Kuetz. Tab. Phyc., tab. 25, f. 1; J. Ag. Till Alg. Syst. VIII, p. 86; De Toni Syll. Alg. I, p. 523.—*H. versatilis* J. Ag. Till Alg. Syst. VIII, p. 86; De Toni Syll. Alg. I, p. 524.—*H. macroloba* Harv. Phyc. Aust. t. 267 et descript. pro part.; Asken. Gazelle, Th. IV, Bot. Alg., p. 14, tab. III, f. 6, 8, 9, 10, tab. IV, f. 11.—*H. Tuna* (non Lam.) Okam., 岡村日本藻類名彙 p. 186.—*H. papyracea* (non Zan.) Okam., 岡村同上, p. 187.

Plants varying in length to about 7-15 cm., slightly incrustated with lime, branching in one plane di-, tri- or polychotomously. *Root* short, more or less bulbous. *Joints* sessile, varying from broadly cuneate, pyriform, oval to discoid and reniform, not-ribbed, margin entire, flat; varying in size to about 20 mm. long, 25 mm. broad, and 0.5-1 mm. thick. Apex of joint sometimes slightly raised, giving the appearance of a cushion at the base of the node. Filaments of central strand fuse in twos or threes at the apex of each joint. Peripheral cells irregularly polygonal in surface-view; 30-48 μ across about 40-120 μ long. Side walls of adjacent cells of peripheral layer are in contact for $\frac{1}{4}$ - $\frac{1}{2}$ their length. Colour light green.

Hab.: On rocks below low tide (Hamajima) extending to 44 fath. (Ogasawara Isl.). Ryukyu, Amami-Oshima and Tanegashima, Ogasawara Isl. (22-44 fath.), Goto Isl., Nomo Zaki, Kayaki and Takahama (14 fath., near Nagasaki), Hamajima (Prov. Shima).

The existence of this plant at Hamajima, Prov. Shima, is the hitherto-known northernmost limit of the distribution of the species of *Halimeda* in the north Pacific.

Pl. CXLVII. Fig. 1: frond of *Halimeda cuneata* Hering, bearing discoid joints (Ryukyu), $\frac{1}{1}$.—Fig. 2: portion of another

frond bearing cuneate joints (Ryukyu), $\frac{1}{1}$.—Fig. 3: peripheral cells, 30-37 μ across, ca. 40-47 μ long, $\frac{220}{1}$.—Fig. 4: surface-view of peripheral cells, $\frac{220}{1}$.—Fig. 5-8: fusion of two or three filaments of central strand into one, $\frac{83}{1}$.—Fig. 9: surface-view of thick, walled peripheral cells (decalcified), $\frac{220}{1}$.—Fig. 10: peripheral cells of the same frond as fig. 9; 40-48 μ across, 96-120 μ long, $\frac{220}{1}$.—Fig. 11: peripheral layer shewing calc stratum, $\frac{152}{1}$.—Fig. 12: the same decalcified, $\frac{152}{1}$.—Fig. 13-14: fusion of filaments: walls of inner sides of fused portions thickened; 13: $\frac{34}{1}$; 14: $\frac{48}{1}$. (Fig. 3-8: Hamajima; fig. 9-10: Kayaki; fig. 11-14: Nomo Zaki).

Halimeda Lamouroux 1812.

さ ぼ て ん ぐ さ 属.

CODIACEÆ み る 科.

體ハ多少厚ク石灰質ヲ被ムリ, 幾多ノ聯關セル關節ヨリ成リ, 各關節ハ扁平乃至圓柱狀ニシテ, 圓形, 楔形, 倒卵形, 三裂等種々アリ, 叉狀, 三叉狀又ハ掌狀ニ分岐シ, 同一平面若クハ幾多ノ面ニ分岐ス. 根ハ圓柱狀又ハ團塊狀ニシテ細キ絲ノ束ヨリ成ル. 體ハ全部互ニ相連絡セル絲ヨリ成リ各部ニ隔膜ナク, 屢々叉狀ニ分岐シ, 表面ニ近ヅクニ隨テ分岐密トナリ遂ニ多少膨レタル部分ノ末梢密ニ相接觸シテ皮層ヲナシ, 皮部ニ多少厚ク石灰質ヲ存ス. 生殖ハ子囊中ニ生ズル游走子ニ依リテ成リ, 游走子ハ卵形ニシテ二條ノ纖毛ヲ有シ接合セサルモノ、如シ; 子囊ハ各關節ノ縁邊又ハ表面ヨリ出ル體ノ内部ノ絲ノ一部ニ小サキ球狀又ハ倒卵形ヲナシテ生ジ短柄ヲ有ス.

從來體ノ形狀即チ主トシテ關節ノ形狀ト石灰質ノ多少等ニヨリテ極メテ多數ノ種類ニ分タレタレドモ遂ニ Barton 女史ニヨリテ體ノ構造上ヨリ約7種ニ收集セラレタリ。其要點ハ一個ノ關節ガ次ノ關節ト相連ル所即チ恰モ地峽ノ如ク細クナレル所ノ構造ニ依ルモノニシテ、此部ヲ假ニ結節點ト稱シテ記サンニ、各關節部ヲ形成スル絲ハ結節點ニ至リテ (I) 數條ノ絲(概テ 2-3 條) 互ニ癒合シテ一トナリ更ニ次ノ關節部ニ至リテ數多ノ絲ニ分ル、モノ; (II) 數條ノ絲互ニ小孔ヲ以テ相通ジ以テ互ニ結合スルモノ; 此二種ノ構造ニ依テ分類ノ基礎ヲ置キタリ。以上ノ構造ハ決シテ誤ルコトナキモノニシテ各關節ノ形狀ノ如キハ同一種ニ於テモ甚シキ差異アルヲ以テ據テ以テ分類ノ標徴ト爲スニ足ラズ。上記ノ性質ニヨリ極メテ多數ノ種類ヲ僅々7個ニ收メタルハ Barton 女史ナレドモ其此點ニ着眼スルニ至ラシメタル最初ノ學者ハ Askenasy 氏ナリトス。

熱帶並ニ溫帶ニ産ス; 本邦亦此種類ニ乏シカラズ。屬ノ名ハ Halimos (海) ニ基ヅク。

Halimeda cuneata Hering.

うちわさぼてんぐさ 岡村 稱

第 CXLVII 圖版.

體ハ約 7-15 cm. 高ク、薄ク石灰質ヲ被ムリ、一平面上ニ分岐シ、二又三又又ハ多又狀ヲナス。根ハ短クシテ多少球根狀ヲナシ、細絲ヨリ成ル。各關節ハ無柄ニシテ、潤キ楔形、倒梨果狀、又ハ卵形ヨリ圓盤狀乃至腎臟狀ニ變ズル等極メテ種々ニ

シテ、脈ナク、縁邊全縁、扁平ナリ；長サ約 20 mm. 幅 25 mm. ニ達シ、大小種々アリ、厚サ又 0.5 乃至 1 mm. アリ。關節ノ頂部ハ時トシテハ少シク膨レテ隆起シ、恰モ小サキ瘤ノ如クナルコトアリ。關節部ヲ形成スル絲ハ二條或ハ三條ヅ、癒着シテ一條トナリ、相集リテ結節點ヲナシ、次ノ關節部ニ至テ再ビ二條又ハ三條ニ分ル。皮層ノ細胞(普通ノ細胞ノ如ク區劃セラレザレドモ、今便利ノ爲メ細胞ト稱ス)ハ表面ヨリ見ルニ多少多角形ニシテ、徑 30-48 μ アリ、高サ約 40-120 μ アリ；其相隣接スル側壁ハ其高サノ $\frac{1}{4}$ - $\frac{1}{2}$ ニ亘リテ接觸ス。質ハ稍多肉ニシテ軟ク、紙ニ附着シ、淡青綠色ナリ。

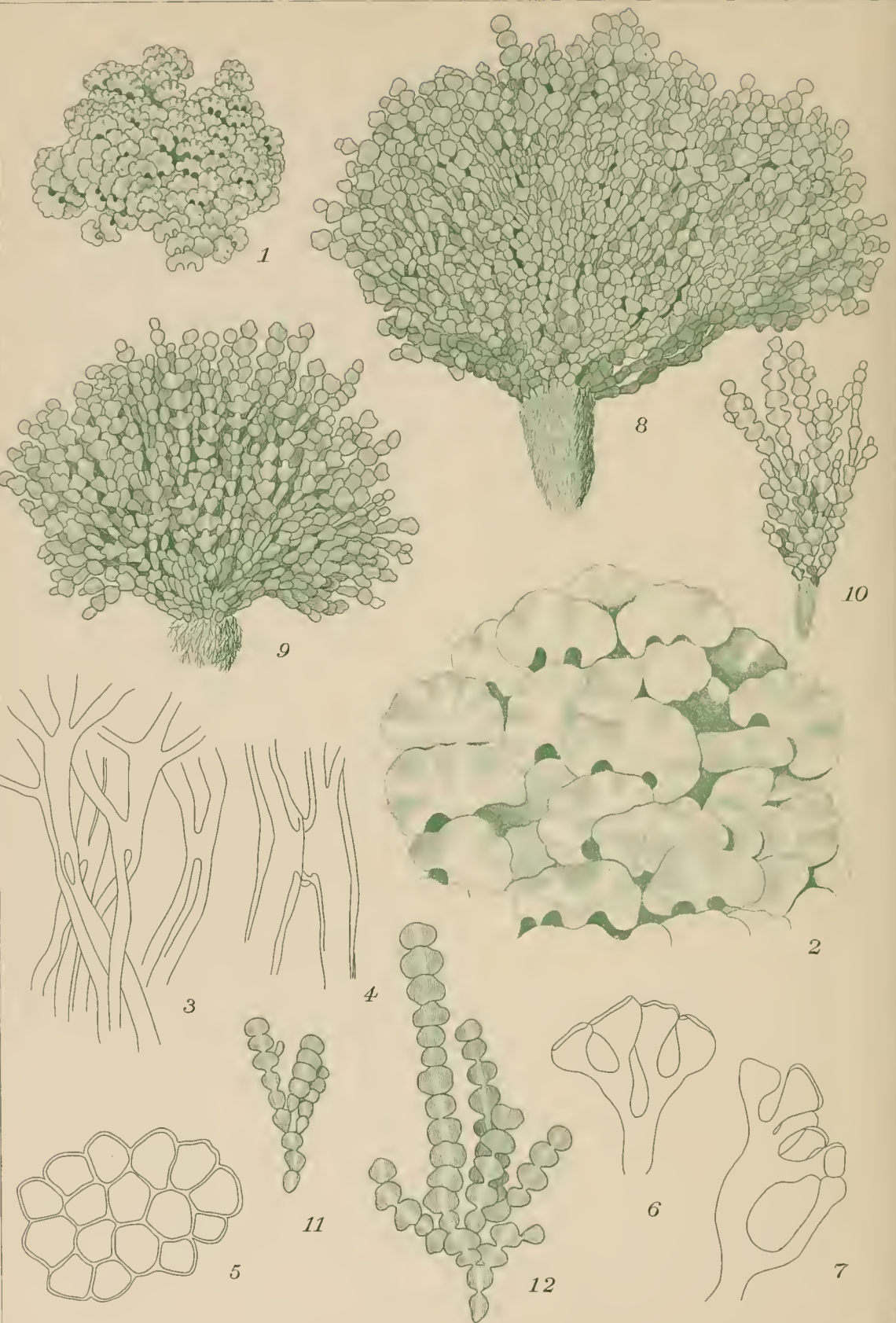
產地：低潮線以下ヨリ 44 尋ノ深處ニ亘リ岩石ノ上ニ在リ、小笠原島(22-44 尋)琉球、奄美大島、種子ケ島、五島、野母崎、蚊燒及高濱(14 尋、長崎灣)、濱島(志州、低潮線附近)。

分布：印度洋及太平洋。

備考：本種ハ *Halimeda Tuna* ト外形ニ於テ殆ド區別スベカラザル程酷似セルヲ以テ予及他ノ學者モ從來之ヲ本種ト混同シタレドモ、該種ハ皮層細胞ノ堅ノ膜ノ癒着スル範圍極メテ少ナキヲ以テ(其長サノ $\frac{1}{25}$ - $\frac{1}{10}$)本種(其長サノ $\frac{1}{4}$ - $\frac{1}{2}$)ト異ナリトス。

本種ト *H. Tuna* ト *H. macrophysa* Ask. トハ共ニ中心ノ絲ニヅヅ、又ハ三ヅヅ、稀ニ尙多數癒合シ、次ノ關節ニ於テ又狀又ハ三又狀ニ分岐シ、關節ハ扁平ニシテ脈ナク、薄ク石灰ヲ被ムリ、圓形又ハ楔形ヲナス點ニ於テ相類スルモノトス。然レドモ本種ト *H. Tuna* トハ上ニ云ヘル如ク皮層細胞ノ附着ノ度ニテ異ナリ *H. macrophysa* ハ皮層細胞全ク遊離ノ甚ダ大(徑約 150 μ)ナルヲ以テ異ナリトス。◆





3 5 1 9 11 4 12 8 6 2 7 10
Halimeda Opuntia Lam.f. cordata Barton さぼてんぐさ Fig.1-7.
Halimeda Opuntia Lam.f. Renschii Barton ひめさぼてんぐさ Fig.8-12.

H. Tuna ハ地中海、印度洋及南部太平洋ニ亘リテ分布スト雖モ邦内迄ハ擴ガラザルモノ、如ク、本種ハ印度洋及太平洋ノ特産ニシテ其遠ク南方ニ亘レル範圍ハ此屬中最モ廣シト稱セラル、即チ Cape Colony ノ東南岸 Port Elizabeth ヲ以テ其南端トス、H. Tuna ノ極南端ハ南ノ回歸線迄ナリ。本種ノ志州濱島ニ産スルハ蓋シ本屬ノ植物ノ北部太平洋ニ分布スル最北端ナルベシ。

第 CXLVII 圖版. 1: うちわさぼてんぐさ, *Halimeda cuneata* Hering. ノ圓キ盤狀ノ關節ヲ有スル體(琉球), $\frac{1}{1}$.—2: 楔形ノ關節ヲ有スル他ノ體(琉球), $\frac{1}{1}$.—3: 皮層細胞, 幅 $30-37\mu$, 長サ約 $40-47\mu$, $\frac{220}{1}$.—4: 皮層細胞ノ表面, $\frac{220}{1}$.—5-8: 2-3 條ノ内部ノ絲ノ一條ニ癒合シタル狀, $\frac{83}{1}$.—9: 皮層細胞ノ厚ク成レルモノ, 脱灰シタリ, $\frac{220}{1}$.—10: 9 圖ノ皮層ヲ縦斷シタルモノ, 幅 $40-48\mu$, 長サ $95-120\mu$, $\frac{220}{1}$.—11: 皮層ニ石灰, c, アルヲ示ス, $\frac{152}{1}$.—12: 同上ノ脱灰シタルモノ, $\frac{152}{1}$.—13-14: 内部ノ絲ノ一二癒合シタルモノ; 癒合シタル部分ノ細胞ハ厚ク成レリ, 13: $\frac{34}{1}$; 14: $\frac{48}{1}$.

(3-8: 濱産島; 9-10: 長崎灣口蚊焼; 11-14: 野母).

Halimeda Opuntia Lam. f. *cordata* Barton.

Nom. Jap.: *Sabotengusa*.

PL. CXLVIII, Fig. 1-7.

Halimeda Opuntia Lam. f. *cordata* Barton The Genus *Halimeda* p. 20, fig. 21.—*H. cordata* J. Ag. Till Alg. Syst., VIII, p. 83; De Toni Syll. Alg. I, p. 522.

Fronds often forming an irregular mass (3-4 cm. high, 4-5 cm. broad), much branched and in more than one plane; joints rounded or reniform, prolonged below into two well marked auricles, which overlap the lower joint, more or less flat, deeply calcified, sessile, crenulated at margin and indistinctly elevated like ribs; size of joints varying to about 3-4 mm. long, 7-8 mm broad.

Hab.: Ishigaki Isl. (Ryukyu, Kuroiwa).

f. **Renschii** Barton. PL. CXLVIII, Fig. 8-12.

Nom. Jap.: *Hime-sabotengusa*.

H. Opuntia Lam. f. *Renschii* Barton l. c. p. 21, f. 22 and 22a.—*H. Renschii* Hauck Ueber einige von J. M. Hildebrandt im Rothen Meere u. Ind. Ocean gesammelte Algen (Hedwigia Heft. V, 1886, p. 167 et Notarisia 1886, p. 254); De Toni Syll. Alg. I, p. 525.—*H. gracilis* (non Harv.) Okam., 岡村, 日本藻類名彙 p. 187.

Fronds forming compact semicircular tuft, branches radiating from the base, 4-7 cm. high. Lower joints of branches and fronds obovate or cuneate, upper ones thin, small, irregularly round or transversely ovate, indistinctly ribbed, usually 3-5 mm. broad, 2-4 mm. long, but in the frond bearing larger and more roundish joints, 7 mm. broad, 5 mm. long. Colour whitish or grayish-green.

Hab.: Ryukyu (Kuroiwa), Kōtōsho (Taiwan, Kawakami).

Pl. CXLVIII. Fig. 1: *Halimeda Opuntia* Lam. f. *cordata* Barton, $\frac{1}{1}$.—Fig. 2: portion of the same, $\frac{3}{1}$.—Fig. 3-4: filaments of central strand, showing mode of fusion; 3: $\frac{83}{1}$; 4: $\frac{220}{1}$.—Fig. 5: surface view of peripheral cells, $\frac{175}{1}$.—Fig. 6-7: longitudinal

view of peripheral cells, $3\frac{5}{1}$.—Fig. 6-10: three different fronds of *f. Renschii*, $\frac{1}{1}$.—Fig. 11-12: portions of *f. Renschii* shewing rounded joints, $\frac{1}{1}$.

Halimeda Opuntia Lam. f. cordata Barton.

さばてんぐさ 岡村 稱

第 CXLVIII 圖版, 1-7 圖.

體ハ往々不規則ナル團塊ヲナシ (高サ 3-4 cm., 幅 4-5 cm) 甚シク分岐シ, 枝ハ同一ノ面ノ上ニ於テ分岐セズ; 關節ハ圓形又ハ腎臟形ニシテ其兩下端少シク下方ニ伸ビテ耳朶ノ如キ形ヲナシ, 以テ少シク次ノ關節ヲ覆フ; 關節ハ多少扁平ニシテ, 厚ク石灰ヲ被ムリ, 無柄, 縁邊小波狀ニウネリ, 表面不明ナル脈ノ如ク隆起ス; 關節ノ大サハ約 3-4 mm. 長ク, 7-8 mm. 廣シ. 白色ナリ.

中心部ノ絲ハ各關節ノ頂端ニ於テ一對ヅ、癒合ス; 其癒合程度ハ不充分ニシテ, 接觸シタル部分ノ膜壁ノ表面ノミニ限ラレタルガ如キ狀態ニアリ. 其各絲ハ癒着シタル部分ヨリ少距離ノ間分岐スルコトナク後ニ三叉狀ニ分岐ス. 皮層細胞ノ互ニ接觸スル部分ハ淺クシテ其長サノ約 $\frac{1}{12}$ 程ナリ.

產地: 石垣島 (琉球, 黒岩).

分布: 弘ク熱帶ニ亘リテ各太洋ニ分布ス.

備考: 此種ト同ジク中心部ノ絲ハ一對ヅ、厚ク石灰ヲ被ムリテ, 關節ニ脈ヲ存スルモノニ *H. gracilis* ト稱スルモノアリ; 該種ハ絲ノ癒合完全ナルト癒合シタル部分ハ次ノ關節ニ於テ三叉狀ニ分岐スルトヲ以テ本種ト異ナリトス

f. **Renschii** Barton. 第 CXLVIII 圖版, 8-12 圖.

ひめさぼてんぐさ 岡村 稱.

體ハ密ナル半圓形ノ叢ヲナシ, 枝ハ基部ヨリ放射狀ニ發シ, 高サ 4-7 cm. アリ. 枝及體ノ下部ノ關節ハ倒卵形又ハ楔形, 上部ノモノハ薄ク小ニシテ不規則ニ圓ク又ハ横ニ卵圓形ニシテ, 不明ナル脈ヲ存シ, 通常幅 3-5 mm, 長サ 2-4 mm. アリ; 然レドモ稍大ナル圓形ノ關節ヲ有スル體ニ於テハ幅 7 mm., 長サ 5 mm. アリ. 色ハ白色又ハ淡綠色ナリ. 構造ハ上記ニ同シ.

產地: 琉球(黒岩), 紅頭嶼(川上).

分布: 弘ク熱帶ニ亘リテ各太洋ニ分布ス.

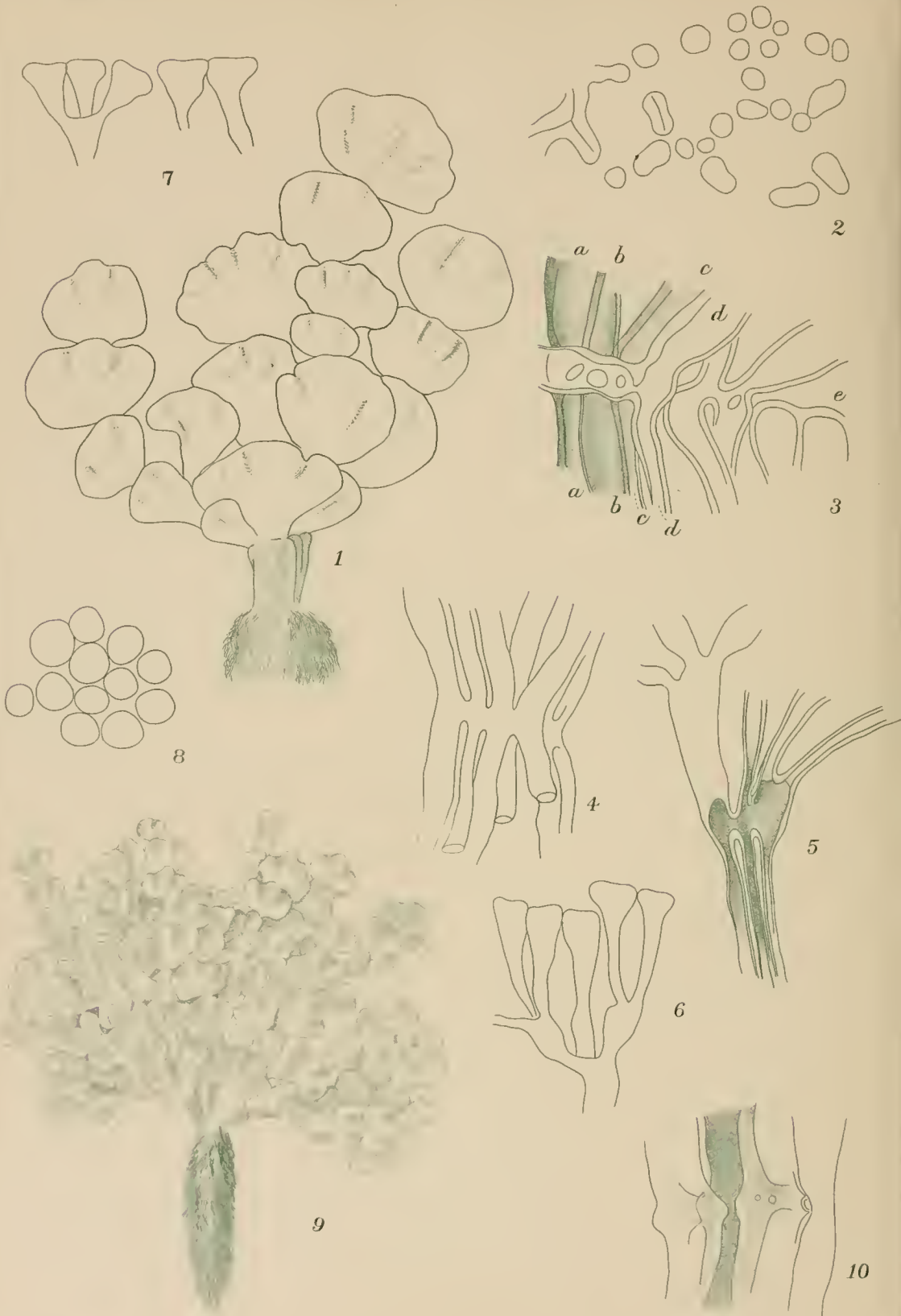
第 CXLVIII 圖版. 1: さぼてんぐさ, *Halimeda Opuntia* Lam. f. *cordata* Barton, ノ體, $\frac{1}{1}$.—2: 同上ノ一部, $\frac{3}{1}$.—3-4: 中心部ノ絲ノ癒着スル狀; 3: $\frac{83}{1}$, 4: $\frac{220}{1}$.—5: 皮層細胞ノ表面, $\frac{175}{1}$.—6-7: 縦ニ皮層細胞ヲ見タルモノ, $\frac{353}{1}$.—8-10: f. *Renschii* ノ三個體, $\frac{1}{1}$.—11-12: f. *Renschii* ノ圓キ關節ヲ有スルモノ, $\frac{1}{1}$.

Halimeda macroloba Decne.

Nom. Jap.: *Hiroha-sabotengusa*.

PL. CXLIX, Fig. 1-8.

Halimeda macroloba Decne.; Barton The Genus *Halimeda* p. 24, fig. 33-38; Kuetz. Sp. Alg. p. 504; Zanard. Plant. Mar. Rub. p. 287; Harv. Phyc. Austr. Tab. 267; J. Ag. Till Alg. Syst. VIII, p. 81; De Toni Syll. Alg. vol. I, p. 520.



K. Okam. de.

8 7

9 1

4

6

5 3 2 10

Halimeda macroloba Decne. ひろはさぼてんぐさ Fig. 1-8.
Halimeda incrassata Lam. f. *Lamourouxii* Barton みづてきぼてんぐさ ノー形態 Fig. 9-10.

Only two specimens of the length 7 and 9 cm., not deeply calcified, branched in one plane. Root generally bulbous or little elongated. Joint immediately above root short, thick, subcylindrical and stalk-like; other joints very irregular, discoid, oval, cuneate, or transversely rounded, not ribbed, thick, sessile; margin thick, entire or slightly crenulated. Largest joint about 18 mm. long, 29 mm. broad, about 1 mm. thick (dried). Peripheral cells 23–37 μ across.

Hab.: Ishigaki Isl. (Ryukyu, Kuroiwa) and Pratas Isl. (near Taiwan, Kawakami).

Pl. CXLIX, fig. 1–8. Fig. 1: frond of *Halimeda macroloba* Decne. from Ishigaki Isl., $\frac{1}{1}$.—Fig. 2: partly optical transverse section through apex of a joint, just below the end of the fused filaments, shewing a portion of the central strand, $\frac{220}{1}$.—Fig. 3: filaments of central strand in longitudinal view, shewing pits at point of fusion; *a a*, *b b*, etc. indicate four filaments; *e*, upper free margin of joint, $\frac{83}{1}$.—Fig. 4: filaments of central strand in longitudinal view, shewing earlier stage of fusion, $\frac{48}{1}$.—Fig. 5: vertical section through apex of joint cut perpendicular to the surface of frond, to show fusion of filaments of the central strand, $\frac{83}{1}$.—Fig. 6–7: longitudinal view of peripheral cells, $\frac{220}{1}$.—Fig. 8: surface-view of peripheral cells, $\frac{220}{1}$.

Halimeda macroloba Decne.

ひろはさぼてんぐさ 岡村 稱

第 CXLIX 圖版, 1–8 圖.

長サ 7 及 9 cm. ノ二標品アルノミニシテ、厚ク石灰ヲ被ムラズ、枝ハ同一面ニ分ル。根ハ概テ團塊狀又ハ少シク長シ。根ノ直グ上ノ關節ハ短ク、太ク、稍圓柱狀ニシテ莖ノ如シ；他ノ

關節ハ甚不規則ニシテ、圓盤狀、卵形、楔形又ハ横ニ圓ク、脈ナク、厚ク、無柄ナリ；縁邊厚ク、全縁若クハ少シク小缺刻アリ。最モ大ナル關節ハ長サ約 18 mm. 幅 29 mm. 厚サ約 1 mm. アリ(乾燥品ニテ)。色ハ白色又ハ稍薬色ナリ。

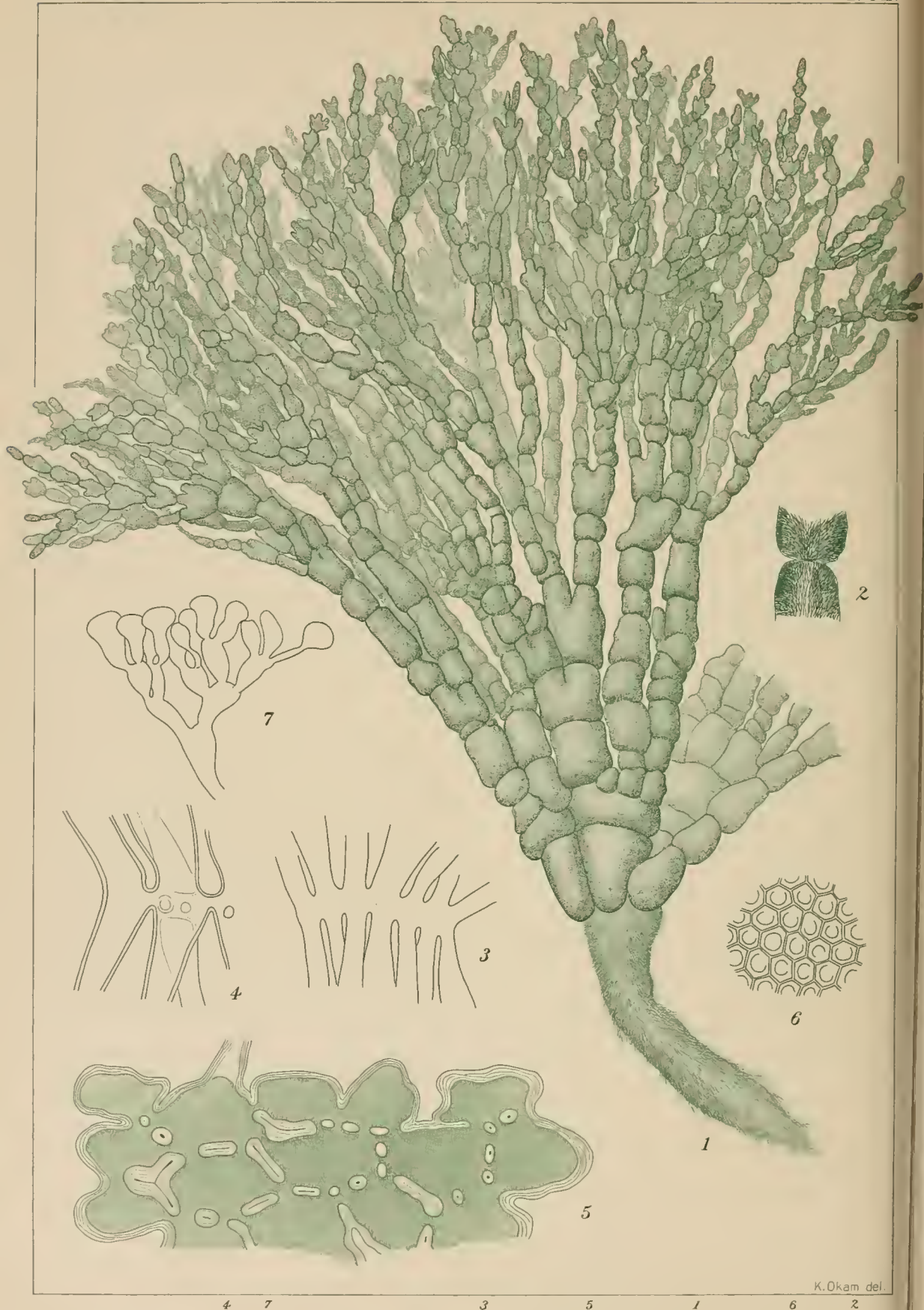
中心部ノ絲ハ癒着スルコトナク互ニ大ナル孔ヲ以テ連絡ス；此孔ハ甚ダ大ナルヲ以テ中心全部ノ絲ハ恰モ一ノ大ナル管ノ如キ狀ヲ呈ス。皮層細胞ハ直徑 23-37 μ アリ、互ニ石灰質ヲ以テ結合セラル、ガ故ニ脱灰スルトキハ各相離ル。

產地：石垣島(黒岩)及 Pratas 島(川上)

分布：印度洋及カロリン群島。

中心部ノ絲ノ孔ヲ以テ互ニ連絡スルハ此種ト次ノ *H. incrassata* トノミナリ、而シテ之ヲ分ツニ本種ハ關節大ニシテ廣ク、扁ク、圓形又ハ卵形ナレドモ、*H. incrassata* ハ下部ノ關節太ク、往々圓柱狀、上部ノモノハ時ニ扁キコトアリテ多少三出スルヲ以テ異ナリトス。

第 CXLIX 圖版, 1-8 圖。 1: ひろはさぼてんぐさ, *Halimeda macroloba* Decne. (石垣島), $\frac{1}{1}$ 。—2: 關節ノ上部地峽ノ如クナレル處ノ横斷面ニシテ其一部ヲ示ス, $\frac{220}{1}$ 。—3: 中心部ノ絲ヲ縦ニ見タルモノニシテ癒着部ノ孔ヲ示ス; aa, bb 等ハ四條ノ絲ヲ指ス; e, 關節ノ上縁邊; $\frac{83}{1}$ 。—4: 中心部ノ絲ヲ縦ニ見タルモノ、癒着ノ初期ヲ示ス, $\frac{48}{1}$ 。—5: 關節ノ面ニ垂直ニ斷リタル斷面、中心部ノ絲ノ癒着部ヲ示ス, $\frac{83}{1}$ 。—6-7: 皮層細胞ヲ縦ニ見タルモノ, $\frac{220}{1}$ 。—8: 皮層細胞ヲ上ヨリ見タルモノ, $\frac{220}{1}$ 。



K. Okam del.

Halimeda incrassata Lamx. f. typica Barton みつてさぼてんぐさ.

Halimeda incrassata Lam. f. **typica** Barton.

Nom. Jap.: *Mitsudô-sabotengusa*.

PL. CL.

Halimeda incrassata Lam. f. *typica* Barton The Genus *Halimeda* p. 27, fig. 39; *Halimeda monile*, *H. tridens*, *H. cylindrica*, *H. polydactylis* are synonyms for several forms of *Halimeda incrassata*.

Plants varying in length to about 16 cm., thickly calcified, especially below, branching in one plane. Root bulbous or cylindrial. Lower joints deeply calcified (thickest 8 mm. in diameter), sometimes forming a cylindrical unbranched stem, adjacent cylindrical joints connected by line to form fan shaped base; upper joints cylindrical or more or less trilobed; often 8 mm. long, 1–2 mm. broad.

f. **Lamourouxii** Barton. Pl. CXLIX, Fig. 9–10.

H. incrassata var. *Lamourouxii* J. Ag. Till Alg. Syst. VIII, p. 86.

Plants 5–6 cm. high; lower joints broadly cuneate or lobed, slightly ribbed or uneven; upper joints more or less reniform, thin, compressed, or more flattened, not deeply calcified, upper margin lobed. Colour gray-green; plants shining with somewhat silvery lustre.

Hab.: Ryukyu (Kuroiwa and Andō).

Pl. CXLIX, fig. 9–10. Fig. **9**: frond of *Halimeda incrassata* Lam. f. *Lamourouxii* Barton, $\frac{1}{1}$.—Fig. **10**: filaments of central strand, shewing pits at point of fusion. $\frac{195}{7}$.

Pl. CL. Fig. 1: frond of *Halimeda incrassata* Lam. f. *typica* Barton, $\frac{1}{1}$.—Fig. 2: longitudinal section cut parallel to the surface of frond, slightly magd.; showing fusion of filaments of central strand at the apex of the lower joint, slightly magd.—Fig. 3: filaments of central strand in longitudinal view, showing earlier stage of fusion where pits are not yet formed, $\frac{4.8}{1}$.—Fig. 4: fusion of filaments more advanced, showing pits at the point of fusion, $\frac{10.5}{1}$.—Fig. 5: partly optical transverse section through apex of joint, just below the ends of the fused filaments; shewing the whole of the central strand; shaded portion indicates interior of the filaments, $\frac{15.2}{1}$.—Fig. 6: surface view of peripheral cells in calcified state, $\frac{8.3}{1}$.—Fig. 7: longitudinal view of peripheral cells, $\frac{8.3}{1}$.

Halimeda incrassata Lam. f. *typica* Barton.

みつでさぼてんぐさ 岡村 稱.

第 CL 圖版.

體ハ高サ約 16 cm. ニ達シ, 厚ク石灰質ヲ被ムリ, 下部殊ニ強ク, 同一ノ面ニ分岐ス. 根ハ團塊狀或ハ圓柱狀ナリ. 下部ノ關節ハ厚ク石灰ヲ存シ(最モ太キモノニテ徑 8 mm. アリ) 時ニ圓柱狀ノ分岐セザル莖ヲナシ, 相隣スル圓柱狀ノ關節互ニ石灰ヲ以テ結合シテ扇狀ノ基部ヲナス; 上部ノ關節ハ圓柱狀又ハ多少三裂シ, 往々 8 mm. 長ク, 幅 1-2 mm. アリ.

中心部ノ絲ハ各關節ノ頂端ニ於テ大小不同ノ孔ヲ以テ互ニ連絡ス, 然レドモ稀ニ全ク孔ヲ作ラズシテ各遊離スルコトアリ. 皮層細胞ハ表面ヨリ見ルニ徑 15-50 μ アリ; 長サハ種々ニシテ, 相接觸スル部分ハ僅ニシテ長サノ約 $\frac{1}{12}$ ナリ.

f. *Lamourouxii* Barton. Pl. CXLIX, fig. 9-10.

體ハ 5-6 cm. 高シ; 下部ノ關節ハ廣キ楔形ヲナシ又ハ分裂シ, 輕ク脈ヲナシ又ハ表面凹凸ス; 上部ノ關節ハ多少腎臟形, 薄ク, 扁壓又ハ扁平, 厚ク石灰ヲ被ムラズ, 上端ノ縁邊ハ分裂ス. 色ハ淡綠色ニシテ稍銀色ノ光澤ヲ呈ス.

產地: 琉球(黒岩, 安藤).

分布: 熱帶ニ普シ. 西印度, 印度洋及太平洋.

本種ト *H. macroloba* トノ異同ニ就テハ該種ノ下ニ附記シタリ.

第 CXLIX 圖版, 9-10 圖. 9: *Halimeda incrassata* Lam. f. *Lamourouxii* Barton ノ體, $\frac{1}{1}$.—10: 中心部ノ絲ヲ縱ニ見タルモノニシテ癒着部ノ孔ヲ示ス, $\frac{1^{0.5}}{1}$.

第 CL 圖版. 1: みつでさぼてんぐさ, *Halimeda incrassata* Lam. f. *typica* Barton ノ體, $\frac{1}{1}$.—2: 關節ノ表面ニ並行ニ斷リタル縱斷面ニシテ地峽部ノ絲ノ癒着シタル狀ヲ示ス, 少シク廓大.—3: 中心部ノ絲ヲ縱ニ見タルモノ, 癒着ノ初期ニシテ孔ノ未ダ形成セラレザルモノ, $\frac{4.8}{1}$.—4: 癒着ノ度ノ進ミタルモノニシテ孔アルヲ示ス, $\frac{10.5}{1}$.—5: 地峽部ノ横斷面ニシテ中心部ノ絲ノ全部ヲ示ス; 一面ニ點々ヲ以テ埋メタル部分ハ各絲ノ内腔ヲ示ス, $\frac{1.5}{1}$.—6: 石灰ヲ被ムレル皮層細胞ヲ上ヨリ見タルモノ, $\frac{8.3}{1}$.—7: 皮層細胞ヲ縱ニ見タルモノ, $\frac{8.3}{1}$.

CORRIGENDA. 訂 正

Vol. III, p. 38; line 3 from above: for CV read CX
" " ; " 10 " " : " CV " CX
" " ; " 11 " " : " Fig. 2 " Fig. 5.
" No. 9; p. 155-171 should be corrected for 177-193.

第 III 卷 第 38 頁 3 行 CV ハ CX ノ誤.
" 第 38 頁 10 行 CV ハ CX ノ "
" 第 38 頁 11 行 Fig. 2 ハ Fig. 5 ノ "
" 第 38 頁 14 行 CV ハ CX ノ "
" 第 73 頁 2 行 もつれみるハさきぶとみるノ誤
" 第 93 頁 下ヨリ 7 行 產地ノ條: 志摩, 遠江, 出雲
能登, 小樽; 相州江ノ島(和田), 陸前氣仙郡
米ヶ崎(鳥羽)ヲ加フ.
" 第九集ノ丁附: 155-171 ハ 177-193 ノ誤.

第 一 卷

I. *Udotea conglutinata* (Soland.) Lam., はごろも, 第一卷, 第 231 頁, 第 XLIV 圖版, 11-12 圖, 第 XLV 圖版, 8-13 圖ハ *Udotea orientalis* A. and E. S. Gepp The Codiaceae of the Siboga Expedition, 1911, p. 119, figs. 1, 4, 47, 48 ナリ.

U. orientalis ハ 印度洋及太平洋ノ新種ニシテ從來多數學者ノ *U. conglutinata* トシタルモノナリ; 而シテ *U. conglutinata* ガ西印度ノ海ニ在ルト同シク *U. orientalis* ハ東印度ノ海ニ産スルモノニシテ其之ト異ナル點ハ體ヲ構成スル絲ノ分岐點附近ノクビレガ *U. orientalis* ニ於テハ同一ノ高サニ在ラズシテハ高ク

ハ低クレドモ *U. conglutinata* ニアリテハ同一ノ高サニ在ルコトニ於テ存ス。又 *U. orientalis* ハ *U. conglutinata* ヨリ纖弱ニシテ其體ヲ構成スル絲ハ太サ夫ヨリモ稍細シ。 *U. orientalis* ハ東ニ於テハ Timor, Celebes 及 Macclesfield Bank, 西ニ於テハ Zangibar 及 Natal ニ産シ, Malay 地方ニハ普通ナルモノ、如シ。

II. *Scinaia furcellata* (Turn.) Biv., ふさのり, 第一卷第12頁, 第II圖版, 19圖; 第III圖版, 16-20圖ハ Setchell ノ *The Scinaia Assemblage* (Univ. of Calif. Publ. Bot. Vol. 6, 1914,) p. 98, Pl. 11 fig. 16-18 ニ記サレタル *Scinaia japonica* Setchell ナリト云フ。

Scinaia japonica Set. ハ *Sc. Johnstoniae* Setch. 及 *Sc. articulata* Setch. ニ類スト雖モ質稍硬ク, 上皮細胞明ニ壘様 (palisade) ヲナシ上皮下ノ細胞層遙ニ夫等ノ種ヨリモ多キヲ以テ異ナリトスト云フ。今 Setchell ノ云フ所ニ從フト雖モ氏ノ研究シタル材料ハ遠藤氏が1900年四月三崎ニテ採集シタル一個ノ標品ニノミ依リタルヲ以テ遠ニ信ヲ措キ難ク宜ク他日ノ研究ニ俟ツベキモノトス。

付テ記ス; 氏ハ予ノ日本海藻標本第一帙第二號ニ *Scinaia furcellata* トシタルモノ、中ニ *Gloiophloca Okamurai* Setch. l.c. p. 115, pl. 15, fig. 50-56, Pl. 16 fig. 57 ヲ混ズト云ヘリ。

第 二 卷

I. *Callophyllis cribrosa* (Harv.), つかさあみ, 第二卷, 第130頁, 第LXXXV-VII圖版ハ *Callophyllis perforata* J. Ag. ナリト遠藤博士ノ訂正ヲ得タリ。—Yen lo, Notes on Algae new to Jap. II, p. 273 (植物學雜誌第XXVIII卷, 英文 94.)

II. *Chaetomorpha spiralis* Okam., ふとじゆすも, 第二卷, 第164頁, 第XCV圖版ハ *Chaetomorpha torta* McClatch. ナリト遠藤博士ノ訂正アリ。—Yendo l.c. p. 264.

第 三 卷

I. *Plocamium abnorme* Hook. et Harv., ゆかり, 第三卷第 1 及 4 頁, 第 CI 圖版ハ *Plocamium Telfairiae* Harv. ナリト遠藤博士ノ訂正ヲ得タリ (Yendo: Notes on Algae new to Japan, III, p. 111; 植物學雜誌第 XXIX 卷, 英文 1915).

II. *Plocamium recurvatum* Okam., まきゆかり, 第三卷, 第 7 頁, 第 CII 圖版, モ亦上記ノ一形品ナリト遠藤博士ノ上記論文ニ在リ.

III. *Plocamium oviforme* Okam., ひめゆかり, 第三卷第 12 及 13 頁, 第 CIII 圖版, 1-5 圖並ニ *Plocamium leptophyllum* Kuetz. var. *flexuosum* J. Ag., ほそゆかり, 第三卷, 第 14 及 15 頁, 第 CIII 圖版 6-7 圖ハ共ニ *Plocamium eoccineum* var. *flexuosum* Harv. ト訂正スベキモトナリトノ遠藤博士ノ說アリ.—Yendo l.c. p. 114.

追 加

第三卷 第 154 頁ニ左ノ一屬ヲ加フ:—

Dilophus J. Agardh 1880.

にせあみち屬

DICTYOTACEAE あみちぐさ科.

體ハ扁平ニシテ中肋ナク, 叉狀, 各部直上シ扇狀又ハ稍羽狀ヲナシ, 頂細胞ノ分裂ニ依テ伸長シ, 後二層ヨリ成ル; 内層ハ數層ノ小サキ細胞ヨリ成リ兩縁ノ間ニ互ニ並行シ; 外層ハ一層ニシテ縦ニ並ビ, 頂端ノ方ニ集リテ一個ノ頂細胞ヲナス. 生殖細胞ハ單獨又ハ小サキ群ヲナシテ集リ, 兩面ニ散在シ又ハ多少相接近ス.

專ラニウホルランド其他熱帶ニ産シ 13-14 種アリ. 一屬ノ名ハ *dis* (二ツ) ト *lophos* (鶏冠又ハ束) トヨリ成ル.

INDEX.

索引

Roman numerals indicate pages for English, and Japanese ones, those for Japanese. Synonyms are printed in Italics and Plates in Arabian numerals. The number of the page at which a species or genus is described is in full-face type.

羅馬數字ハ英文ノ頁ヲ示シ、日本數字ハ和文ノ頁ヲ示ス。又亞刺比亞數字ハ圖版ノ番號ニシテ草體ノ學名ハ異稱ナリ。太キ活字ハ種ノ記載アル頁ヲ示ス

A

- Abies marina* (Turn.) J. Ag. (*Cystosira*)
四九
- abietina* Rupr. (Chordaria), root of.
54, C XIV
- abnorme* H. et H. (Plocamium)
1, 四, CI, 二一九
- f. *uncinatum* Okam. 2, 六, CII
- Acanthocodium* 117
- Acetabularia* 21, 二三
- Aerocarpus* 195, 196, 一九七
- acuta* Kütz. (*Dictyota*) 39
- acutiloba* Kütz. (*Dictyota*) 32
- adhaerens* (Cabr.) C. Ag. (*Codium*)
140, 一四一, CXXXIV, 142
- affine* (non Kütz.) Martens (*Plocamium*)
2, 五
- affinis* Kütz. (*Dictyota*) 39
- Amansii* Lam. (*Gelidium*)
25, 二七, CVI; 53, 100, 101, 103
- Amansii* Lam. (*Fucus*) 25
- ambigua* Okam. (*Caulerpa*)
168, 一七〇, CXXXIX

- anceps* Harv. (*Caulerpa*) 94, 九五, CXXV
- angustissima* Soud. (*Dictyota*) 29
- arabicum* Kg. (*Codium*) 140
- articulata* J. Ag. (*Cystosira*)
47, 四九, CXIV
- articulata* Kg. (*Cystoseira*) 47
- articulata* Kg. (*Hormophysa*) 47
- articulata* (Forsk.) Zan. (*Hormosira*) 47
- attenuata* Kütz. (*Dictyota*) 39

B

- Bartayresiana* var. β . *divaricata* J. Ag.
(*Dictyota*) 31
- Boryana* J. Ag. (*Caulerpa*) 19
- botryoides* Heydr. (*Plocamium*) 二五
- brachypus* Harv. (*Caulerpa*) 94
- Brachytrichia* Zanard.
137, 一三八, 一三九
- Bursae* (L.) Ag. (*Codium*) 146, 一四七

C

- capillacea* (Gmel.) Born. et Thur.
(*Pterocladia*) 50, 五二, CXV
- capillaceum* Kg. (*Gelidium*) 59

<i>capillaceus</i> Gmel. (<i>Fucus</i>)	50	<i>Codium</i> Stackh.	七二; 70, 71, 七三, 74, 75, 七五, 七六, 177, 一一八, 140, 141, 142, 143, 一四四, 145, 一四六, 147, 149, 一五〇, 151, 一五二, 一五三, 155, 156, 157, 一五八, 一五九, 一六〇, 177, 一七八, 一七九, 180, 一八二
<i>capillaris</i> Huds. (<i>Fucus</i>)	87	<i>coeruleus</i> (Balb.) Mont. (<i>Compsopogon</i>)	130, 131, 一三三, 一三五, 一三六
<i>capillaris</i> Lam. (<i>Gigartina</i>)	87	<i>Comp-opogon</i> Mont.,	一三二; 128, 130-131, 一三三, 一三六
<i>capillaris</i> (Huds.) Carmich. (<i>Gloiosiphonia</i>)	86, 八九, CXXIV	<i>conglutinata</i> (Soland.) Lam. (<i>Udotea</i>)	二一七
<i>cartilagineum</i> Grer. (<i>Gelidium</i>)	100, 一〇三	<i>contractum</i> Kjellm. (<i>Codium</i>)	70, 七三, CXX
<i>cartilagineum</i> Harv. (<i>Gelidium</i>)	25	<i>cordata</i> J. Ag. (<i>Halimeda</i>)	207
<i>cartilagineus</i> (<i>Sphaerococcus</i>)		<i>coriaceum</i> (Holm.) Okam. (<i>Pachydietyon</i>)	40, 四四
<i>β setaceus</i> Ag.	25	<i>cornea</i> Okam. (<i>Grateloupia</i>)	63, 六四, CXVIII
<i>Caulerpa</i> Lam.	一九, 九五; 18, 19, 二〇, 36, 三七, 38, 66, 67, 六八, 69, 70, 94, 九五, 97, 119, 一二〇, 168, 一七〇	<i>corneum</i> (<i>Gelidium</i>) var. <i>a</i> J. Ag.	50
<i>Ceramium</i>	91, 九二	var. <i>crinale</i> (C. Ag.) J. Ag.	195
<i>chalybeus</i> Kg. (<i>Compsopogon</i>)	130, 一三四	var. <i>pinnatum</i> Kg.	50
<i>Charoides</i> Lam. (<i>Hypnea</i>)	8	<i>cribrosa</i> Harv. (<i>Callophyllis</i>)	二一八
<i>Chauvinia</i>	66, 68-69	<i>crinale</i> (Turn.) Lam. (<i>Gelidium</i>)	195
<i>Chondrophyllum</i>	56, 五八	f. <i>lubricum</i> Hauck	196, 一九八
<i>Chordaria</i> Harr. (<i>Cladosiphon</i>)	189	f. <i>genuinum</i> Hauck	196, 一九七
<i>Chordaria</i>	54, 183, 184, 185, 一八六, 一八七, 188, 190, 一九一, 一九二, 一九三	<i>crinalis</i> Kuetz. (<i>Aerocarpus</i>)	195
<i>Cladosiphon</i>	189, 191, 一九三	<i>crinalis</i> Turn. (<i>Fucus</i>)	195
<i>Cladosiphon</i> Kg. (<i>Chordaria</i>)	185, 一七八, 188, 一九一, CXLIV, CXLV	<i>crinitum</i> Kuetz. (<i>Gelidium</i>)	79
<i>clarifer</i> Turn. (<i>Fucus</i>)	66	<i>crinitus</i> Gmel. (<i>Fucus</i>)	79
<i>clarifera</i> Ag. (<i>Caulerpa</i>)	66	<i>crinitus</i> J. Ag. (<i>Prionitis</i> ?)	79
<i>clarifera</i> Kg. (<i>Chauvinia</i>)	66	<i>crinitus</i> (Gmel.) Rupr. (<i>Tichocarpus</i>)	79, 八二, CXXI-CXXIII
<i>coarctatum</i> Okam. (<i>Codium</i>)	141, 一四四, CXXXIV	<i>crispata</i> Kg. (<i>Phycoseris</i>)	164
<i>coccineum</i> (Huds.) Lyngb. (<i>Plocamium</i>)	四	<i>cuneata</i> Hering. (<i>Halimeda</i>)	202, 二〇五, CXLVII
var. <i>flexuosum</i>	二一九		
<i>coccineum</i> (<i>Plocamium</i>) var. <i>flexuosum</i>			
Harv.	14		

<i>cylindracea</i> Sond. (<i>Caulerpa</i>)	68
var. <i>macra</i> Harv.	68
<i>cylindracea</i> Kg. (<i>Chauvinia</i>)	68
<i>cylindrica</i> (<i>Halimeda</i>)	213
<i>cylindricum</i> Holm. (<i>Codium</i>)	155, 一五六, CXLI, 157

<i>Cystophyllum</i>	109
<i>Cystoscira</i> C. Ag.	四八, 47, 四九

D

<i>decipiens</i> (<i>Cladosiphon</i>)	191, 一九三
<i>dentata</i> Lam. (<i>Dictyota</i>)	115, 一六, CXXIX
<i>Dictyota</i> Lam.	一六; 15, 一七, 29, 三〇, 31, 三二, 33, 34, 三五, 39, 40, 41, 四三, 115, 一六, 161, 一六二
<i>dichotoma</i> (Huds.) Lam. (<i>Dictyota</i>)	39, 四三, CXI-CXIII
f. <i>implexa</i>	41, 四五
f. <i>typica</i>	40, 四四
<i>dichotoma</i> (<i>Grateloupia</i>)	56-57, 五八
<i>dichotoma</i> Lyngb. (<i>Ulva</i>)	39
<i>dichotoma</i> Harv. (<i>Zonaria</i>)	39
<i>Dilophus</i> J. Ag.	154, 二一九
<i>dimorphum</i> Sved. (<i>Codium</i>)	74, 七六, 143, 一四五
<i>divaricatum</i> (non Holm.) A. et E. S. Gepp (<i>Codium</i>)	75, 七六
<i>divaricatum</i> Holm. (<i>Codium</i>)	155, 一五八, CXXXVI
f. <i>hybrida</i> Okam.	157, 一六〇, CXXXV, f. 17
<i>divaricata</i> Lam. (<i>Dictyota</i>)	31, 三二, CVIII
<i>divaricata</i> Okam. (<i>Grateloupia</i>)	55, 七五, CXVI-CXVII; 61, 六二, 64, 六五

E

<i>Ecklonia</i> Horuem.	172, 一七四, 一七五
<i>Eisenia</i>	一七四
<i>elongata</i> Kütz. (<i>Dictyota</i>)	39
<i>elongatum</i> Ag. (<i>Codium</i>)	178, 一七九
<i>Enteromorpha</i> Link.	一六五, 163, 一六六, 一六七
<i>Enteromorpha</i> (<i>Ulva</i>)	
var. <i>lanecolata</i> Le Jol.	164

F

<i>falcata</i> Kütz. (<i>Caulerpa</i>)	38
<i>Farlowi</i> Born. (<i>Hormactis</i>)	138
<i>Fergusonii</i> Murr. (<i>Caulerpa</i>)	119, 一二〇, CXXX
<i>filamentosa</i> (Wulf.) Harv. (<i>Spyridia</i>)	8, 一〇, CII
<i>filamentosus</i> Wulf. (<i>Fucus</i>)	8
<i>filicina</i> (<i>Grateloupia</i>)	56-57, 61, 六二
<i>firma</i> E. S. Gepp (<i>Chordaria</i>)	183, 一八六, CXLIH, CXLV
<i>fissidentoides</i> Holmes (<i>Herposiphonia</i>)	200, 二〇二
<i>flagelliformis</i> Ag. (<i>Chordaria</i>)	184, 一八七, 190, 一九二, 一九三
<i>fragile</i> Sur. (<i>Acanthocodium</i>)	117
<i>fragile</i> (Sur.) De Toni (<i>Codium</i>)	117
<i>Freyinetii</i> Ag. (<i>Caulerpa</i>)	18
<i>Freyinetii</i> Bory (<i>Caulerpa</i>)	19
<i>Freyinetii</i> (<i>Caulerpa</i>) var. <i>de Boryana</i>	
f. <i>occidentalis</i> Web. v. Bos.	19, 二〇, CV
var. <i>serrulata</i> Zanard.	18
var. <i>typica</i> f. <i>lata</i> Weber v. Bosse	18, 二〇, CV

<i>Fucus</i>	8, 25, 50, 79, 66, 87
<i>furcellata</i> (Turn.) Biv. (<i>Scinaia</i>)	二一七
<i>fusiforme</i> Harv. (<i>Cystophyllum</i>)	109
<i>β clavigerum</i> Harv.	109
<i>fusiformis</i> Yendo (<i>Turbinaria</i> ?)	109
<i>fusiformis</i> (Harv.) Yendo (<i>Turbinaria</i>)	109, 一一二, CXXVIII-CXXIX
<i>β clavigera</i> (Harv.) Yendo	109, 一一二, CXVIII

G

<i>Gelidium</i>	25, 二七, 50, 79, 99, 100, 101, 一〇三
<i>Gigartina</i>	87
<i>Gloiosiphonia</i> Carnich.	86, 八八, 八九
<i>gracilis</i> (non Harv.) Okam. (<i>Halimeda</i>)	208
<i>Grateloupia</i>	55, 56, 五七, 五八, 五九
	60, 六一, 六二, 63, 六四, 六五
<i>granulata</i> Ag. (<i>Cystoseira</i>)	49

H

<i>Halimeda</i>	二〇四; 202-215
<i>Herposiphonia</i>	199, 200, 二〇一, 二〇二
<i>Hormactis</i>	137, 138
<i>Hormophysa</i>	47, 49
<i>Hormosira</i>	47
<i>Hypnea</i>	8

I

<i>implexa</i> Kütz. (<i>Dictyota</i>)	39
<i>incrassata</i> Lam. (<i>Halimeda</i>)	
<i>f. Lamourouxii</i> Barton	213, 二一五, CXLIX
<i>f. typica</i> Barton	213, 二一四, CL
<i>incrassata</i> (<i>Halimeda</i>)	
<i>var. Lamourouxii</i> J. Ag.	213
<i>intricatum</i> Okam. (<i>Codium</i>)	74, 七五, CXX; 143, 一四五

<i>Iridaea</i>	86
----------------	----

J

<i>japonica</i> Setchell (<i>Scinaia</i>)	二一八
<i>japonicum</i> Okam. (<i>Ceramium</i>)	91, 九二, CXXIV

L

<i>lacte-virens</i> Mont. (<i>Caulerpa</i>)	67
<i>lacte-virens</i> Kütz. (<i>Chauvinia</i>)	68
<i>Laminaria</i>	173, 一七六
<i>lanceolata</i> Kütz. (<i>Enteromorpha</i>)	164
<i>latifolia</i> Kütz. (<i>Dictyota</i>)	39
<i>latum</i> Sur. (<i>Codium</i>)	158, 一六〇, CXLI
<i>leptophyllum</i> Kütz. (<i>Plocamium</i>)	
<i>var. flexuosum</i> J. Ag.	14, 一五, CIII; 二一九
<i>Lindenbergii</i> (non Binder) Hariot	
(<i>Codium</i>)	158
<i>linearis</i> (Ag.) Grev. (<i>Dictyota</i>)	29, 三〇, CVII
<i>Linza</i> (L.) J. Ag. (<i>Enteromorpha</i>)	163, 一六七
<i>f. crispata</i>	165, 一六八, CXXXVIII
<i>f. lanceolata</i>	165, 一六八
<i>Linza</i> L. (<i>Ulva</i>)	164
<i>lubrica</i> Lyngb. (<i>Gigartina</i>)	87
<i>lubricus</i> Kütz. (<i>Aerocarpus</i>)	195, 196
<i>lubricus</i> Kütz. (<i>Sphaerococcus</i>)	196, 一九八
<i>lucida</i> (Brown) J. Ag. (<i>Pterocladia</i>)	52

M

<i>macroloba</i> Deesne. (<i>Halimeda</i>)	210, 二一一
<i>macroloba</i> Harv. (<i>Halimeda</i>)	203
<i>macrophyssa</i> Kütz. (<i>Chauvinia</i>)	66
<i>macrophyssa</i> Ask. (<i>Halimeda</i>)	二〇六
<i>mamillosum</i> Harv. (<i>Codium</i>)	151, 一五二, CXXXV; 149, 151

marginata Okam. (Dictyota)	
	33, 三五, CVIII, 154
marginatus (non J. Ag.) Okam.	
(Dilophus)	154
Mertensiana P. et R. (Iridaea)	83
Mertensiana (P. et R.) Schmitz	
(Turnerella)	83, 八五, CXXIII
Mertensiana J. Ag. (Schizymenia)	84
minutissima Okam. (Acetabularia)	21, 二三
monile (Halimeda)	213
Morrowii Harv. (Polysiphonia)	
	104, 一〇七, CXXVII
mucronatum J. Ag. (Codium)	
var. Californicum J. Ag.	
	117, 一八, CXXX; 71, 七三
myrica (Gmel.) Ag. (Cystoseira)	四九

N

Najadiiformis Kuetz. (Caulerpa)	19
Nostoe	一三八
Notarisii Sord. (Dictyota)	31

O

obtusiloba Ag. (Rytiphloea)	123
obtusiloba (Mert.) J. Ag. (Vidalia)	
	123, 一二六, CXXXI
Ōishii Okam. (Comp. opogon)	
	128, 一三三, CXXXII
Okamurai Setch. (Glo.ophloea)	二一八
Opuntia Lam. (Halimeda)	
f. cordata Barton.	207, 二〇九
f. Renschii Barton.	208, 二一〇
orientalis A. et E. S. Gepp (Udotea)	二一七
ornata Zan. (Dictyota)	39
osmundacea (Menz.) Ag. (Cystoseira)	

(Stephanocystis)	四九
ovale Zinard. (Codium)	146, 一四七
ovicornis Okam. (Plocanium)	12
oviforme Okam. (Plocanium)	
	12, 一三, CIII; 二一九

P

Pachydietyon	40, 四四
pacificum Okam. (Gelidium)	
	99, 一〇一, CXXVI-CXXVII
papyracea (non Harv.) Okam. (Halimeda)	
	203
patens J. Ag. (Dictyota)	15, 一七, CIV
perforata J. Ag. (Callophyllis)	二一八
Phycoseris	164
Plocanium (Lam.) Lyngb.	1, 2, 三, 四, 5,
	六, 7, 12, 一三, 14, 一五, 二一九
plumaris f. longipes Weber v. Bosse	
(Caulerpa)	36
polydactylis (Halimeda)	213
polyphysoides Crouan (Acetabularia)	
	21, 二三
Polysiphonia Grev.	
	一〇五; 104, 一〇七; 105, 一〇八
pomoides J. Ag. (Codium)	
	149, 一五〇, 一五一
Prionitis	79
Pterocladia J. Ag.	五一; 50, 五二
pugniformis Okam. (Codium)	
	147, 一四九, CXXXV

Q

Quoyi (C. Ag.) Born. et Flah.	
(Brachytrichia)	137, 一三九, CXXXIII
Quoyi Born. (Hormactis)	132

R

<i>racemosa</i> Web. v. Bosse (<i>Caulerpa</i>)	
var. <i>clavifera</i> f. <i>macrophysa</i>	
Web. v. Bosse	66, 六七, CXIX
var. <i>lacte-virens</i> Web. v. Bosse	
	67, 六八, CXIX
<i>radicosa</i> Kjellm. (<i>Laminaria</i>)	173, 一七六
<i>ramosissima</i> Okam. (<i>Grateloupia</i>)	
	60, 六一, CXVII
<i>recurvatum</i> Okam. (<i>Plocamium</i>)	7, CII, 二一九
<i>Renshii</i> Hauck (<i>Halimeda</i>)	208
<i>repens</i> Cronan (<i>Codium</i>)	75, 七六
<i>Ritteri</i> Set. et Gard. (<i>Codium</i>)	152, 一五三
<i>rivulariacformis</i> Zanard. (<i>Brachytrichia</i>)	
	137
<i>Rytiphloea</i>	123

S

<i>saccatum</i> Okam. (<i>Codium</i>)	
	145, 一四六, CXXXV
<i>Schizymenia</i>	84
<i>Seytonema</i>	138
<i>Scinaia</i>	二一七, 二一八
<i>sertularioides</i> (Gmel.) Howe (<i>Caulerpa</i>)	
f. <i>longipes</i> J. Ag.	36, 三七, CX
<i>Sphaerococcus</i>	25
<i>spinescens</i> Kütz. (<i>Acrocarpus</i>)	195
<i>spinulosa</i> Harv. (<i>Dictyota</i>)	
	161, 一六二, CXXXVII
<i>spiralis</i> Okam. (<i>Chaetomorpha</i>)	二一八
<i>spiralis</i> Kütz. (<i>Dictyota</i>)	39
<i>Spyridia</i> Harv.	九: 8, 一〇
<i>stolonifera</i> Okam. (<i>Ecklonia</i>)	
	172, 一七五, CXI
<i>Stephanocystis</i>	49
<i>subdisticha</i> Okam. (<i>Herposiphonia</i>)	
	199, 二〇一

<i>subserrata</i> Okam. (<i>Caulerpa</i>)	97, CXXV
<i>subtubulosum</i> Okam. (<i>Codium</i>)	155

T

<i>taxifolia</i> J. Ag. (<i>Caulerpa</i>)	38
<i>taxifolia</i> (Vahl) Ag. (<i>Caulerpa</i>)	
f. <i>typica</i> Sved.	38, CV
<i>Telfairiac</i> Harv. (<i>Plocamium</i>)	219
<i>Thamnophora</i> C. Ag.	四
<i>Tichocarpus</i> Rupr.	八〇; 79, 八二
<i>tomentella</i> Harv. (<i>Caulerpa</i>)	69
<i>tomentosum</i> Stackh. (<i>Codium</i>)	117
<i>torta</i> Mc Clatch. (<i>Chaetomorpha</i>)	二一八
<i>tridens</i> (<i>Halimeda</i>)	213
<i>triquetra</i> (L.) J. Ag. (<i>Cystoseira</i>)	
(<i>Hormophysa</i>)	四九
<i>Tuna</i> (non Lam.) Okam. (<i>Halimeda</i>)	203
<i>Turbinaria</i> Lam.	一一一; 109, 一一二
<i>Turnerella</i> Schmitz	八四; 83, 八五

U

<i>Ulva</i>	39, 164
<i>Udotca</i>	二一七
<i>urecolata</i> Harv. (<i>Polysiphonia</i>)	
	105, 一〇八

V

<i>versatilis</i> J. Ag. (<i>Halimeda</i>)	203
<i>Vidalia</i> Lam.	一二五; 123, 一二六
<i>volubilis</i> Kütz. (<i>Dictyota</i>)	39
<i>vulgaris</i> Kütz. (<i>Dictyota</i>)	39

W

<i>Webbiana</i> Kg. (<i>Chauvinia</i>)	69
<i>Webbiana</i> (<i>Caulerpa</i>)	
f. <i>tomentella</i> Web. v. B.	69, 七〇, CXIX

Z

<i>Zonaria</i>	39
----------------	----

INDEX FOR JAPANESE NAMES.

和 名 索 引

Roman numerals in *Italic* indicate pages for Japanese; Arabian ones, number of Plate.

A

abura-abura	178, CXLII
Aimidori 屬	138
Ai-midori	137, 139, CXXXIII
Amidzi-gusa 屬	16
Amidzi-gusa	39, 43, CXI-CXIII
Antokumé	176
Aramé 屬	174
Awonori 屬	165

B

Buto-kusa	27, CVI
-----------	---------

F

Fukurin-amidzi	33, 35, CVIII, 154
Fukuro-h'ziki	112, CXXVIII
Fukuromiru	145, 146, CXXXV
Fundoshi	86
Fuji-no-lia-zuta	119, 120, CXXX
Fusa-nori (訂 正)	218
Futo-juzumo (訂 正)	218

G

gagamé	175, CXL
gani-kusa	53, CXV

H

Hagoromo (訂 正)	217
Hai-miru	140, 141, CXXXIV, 144
Hané-igisu	91, 92, CXXIV

Hari-amidzi	161, 162, CXXXVI
Hera-iwadzuta	94, 95, CXXV
Hime-iwadzuta	168, 170, CXXXIX
Hime-kusa	27, CVI
Hime-sabotengusa	208, 210, CXLVIII
Hime-yukari	12, 13, CIII; 219
Hira-miru	158, 160, CXLII
Hiroha-sabotengusa	210, 211, CXLIX
Hiziki	109, 112, CXXVIII-IX
Hoso-yukari	14, 15, CIII

I

Ichii-dzuta	38, CV
Ishimodzuku	161, 164, CXLIII, CXLV
Ito-amidzi	29, 30, CVII
Ito-funori 屬	88
Itofuuori	88, 89, CXXIX
Ito-gusa 屬	105
Ito-tengusa	195, 197, CXLVI
Iwadzuta 屬	19, 95

K

Kadzuno-amidzi	31, 32, CVIII
Kaeri-nami 屬	125
Kaeri-nami	123, 126, CXXXI
Kareki-gusa 屬	80
Kareki-gusa	79, 82, CXXI-CXXIII
Kata-nori	55, 57, CXVI-CXVIII; 62, 65
Kinu-kusa	27, CVI

Kizami-dzuta 97, CXXV
 Kobushi-miru 147, 149, CXXXV
 Kohira 53, CXV
 Koke-iwadzuta 69, 70, CXIX
 Kokoro-buto 27, CVI
 Komon-amidzi 15, 17, CIV
 Korumo-ha 27, CVI
 Kurohimegoke 199, 201, CXLVI
 Kuromiru 155, 158, CXXXVI
 Kusa-modzuku 169, 169, CXLIV, CXLV
 Kuznre-miru 155, 156, CXLI

M

Maki-yukari 7, CH; 219
 Makusa 27, CVI
 Matsu-kusa 53, CXV
 Me-kusa 27, CVI
 Miru 117, 118, CXXX; 73
 Mitsude-sabotengusa 213, 214, CL
 Modzuku 191, CXLIV-V
 Moro-itcgusa 104, 107, CXXVII
 Motsure-miru 74, 75, CXX

N

Nagamiru 155, 156, CXLI; 157
 Nezashi-miru 141, 144, CXXXIV
 Nise-amizi 屬 219
 Norome 86, CXXIII

O

Oba-kusa 50, 52, CXV
 Ōla-tsuno-mata 86
 Ōbusa 99, 101, CXXVI-VII
 Ōishiso 屬 132
 Ōishi-sō, 128, 133, CXXXII-III
 Otoko-gusa 101, CXXVI-VII

R

Rappa-moku 屬 111

S

Sabotengusa 屬 204
 Sabotengusa 207, 209, CXLVIII
 Saihai-dzuta 19, 20, CV
 Sakibuto-miru 70, 73, CXX
 Sameno-tasuki 178 CXLI
 Sennari-dzuta 66, 67, CXIX
 Sudzi-mnkade 60, 61, CXVII
 Snrikogi-dzuta 67, 68, CXIX

T

Takanoha-dzuta 36, 37, CX
 Tamamiru 151, 152, CXXXV; 149, 150, 151
 Tanba-nori 86
 Tengusa 25, 27, CVI
 Toge-amidzi 115, 116, CXXIX
 Tokoro-tengusa 27, CVI
 Tsukasa-ami (訂 正) 218
 Tsurn-aramae 172, 175, CXL
 Tsuno-mukade 63, 64, CXVIII

U

Ubuge-gusa 8, 10, CH
 Uchiwa-sabotengusa 202, 205, CXLVII
 Usuba-awonori 163, 167, CXXXVIII

Y

Yabanemoku 屬 48
 Yabane-moku 47, 49, CXIV
 Yezo-nameshi 屬 84
 Yezo-nameshi 83, 85, CXXIII
 Yore-dzuta 18, 20, CV
 Yota-kusa 53, CXV
 Yukari 1, 4, CI, 219

K. OKAMURA.

ALGAE JAPNICAE EXSICCATE.

日本海藻標品 第二帙

FASCICULUS II.

- | | |
|--|--|
| 51. <i>Porphyra suborbiculata</i> Kjellm. | 76. <i>Ptilota pectinata</i> (Gunn.) Kjellm.
f. <i>typica</i> Kjellm. |
| 52. <i>Batrachospermum moniliforme</i>
Roth. | 77. <i>Carpoblepharis Schmitziana</i>
(Rbd.) Okam. |
| 53. <i>Batrachospermum virgatum</i>
(Kuetz.) Sirod. | 78. <i>Ceramium clavulatum</i> Ag. |
| 54. <i>Batrachospermum Gallaei</i> Sirod. | 79. <i>Microcladia corallinae</i> (Mart.)
Okam. |
| 55. <i>Yatabella hirsuta</i> Okam. | 80. <i>Campylaeophora Hypnaeoides</i>
J. Ag. |
| 56. <i>Endocladia complanata</i> Harv. | 81. <i>Gloiopeltis cervicornis</i> (Suring.)
Schmitz. |
| 57. <i>Gigartina Teedii</i> (Roth) Lamour. | 82. <i>Peyssonnelia caulifera</i> Okam. |
| 58. <i>Gigartina intermedia</i> Suring. | 83. <i>Corallina radiata</i> Yendo. |
| 59. <i>Eucheuma spinosum</i> (L.) J. Ag. | 84. <i>Zonaria Diesingiana</i> J. Ag. |
| 60. <i>Ceratodictyon spongiosum</i> Zanard. | 85. <i>Scytosiphon lomentarius</i>
(Lyngb.) J. Ag. |
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Grev. | 86. <i>Endarachne Binghamiae</i> J. Ag. |
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J. Ag. Var. <i>continua</i> Okam.
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Okam. | 93. <i>Chaetomorpha crassa</i> (Ag.)
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| 70. <i>Polysiphonia fragilis</i> Suring. | 95. <i>Caulerpa ambigua</i> Okam. |
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Harv. |
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et De Toni. |
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Fkbg. | 100. <i>Brachytrichia Quoyi</i> (Ag.)
Born. et Flah. |

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K. OKAMURA.

ALGAE JAPONICAE EXSICCATAE.

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第三卷 第二集

理學博士 岡村金太郎 著

ICONES OF JAPANESE ALGÆ.

Vol. III. No. II.

BY

K. Okamura *Rigakuhakushi.*



Contents of No. II. (PL. CVI—CX.)

Gelidium Amansii Lamour.

Dictyota linearis (Ag.) Grev.

„ *divaricata* Lamour.

„ *marginata* Okam. n. sp.

Caulerpa sertularioides (Gmel.) Howe f. *longipes* J. Ag.

„ *taxifolia* (Vahl) Ag. f. *typica* Sved.

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Published

by

THE AUTHOR.

July, 1913.

Tokyo.

K. OKAMURA.

ALGAE JAPONICAE EXSICCATE.

日本海藻標品 第二帙

FASCICULUS II.

- | | |
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| 51. <i>Porphyra suborbiculata</i> Kjellm. | 76. <i>Ptilota pectinata</i> (Gunn.) Kjellm.
f. <i>typica</i> Kjellm. |
| 52. <i>Batrachospermum moniliforme</i>
Roth. | 77. <i>Carpoblepharis Schmitziana</i>
(Rbd.) Okam. |
| 53. <i>Batrachospermum virgatum</i>
(Kuetz.) Sirod. | 78. <i>Ceramium clavulatum</i> Ag. |
| 54. <i>Batrachospermum Gallaei</i> Sirod. | 79. <i>Microcladia corallinae</i> (Mart.)
Okam. |
| 55. <i>Yatabella hirsuta</i> Okam. | 80. <i>Campylaeophora Hypnaeoides</i>
J. Ag. |
| 56. <i>Endocladia complanata</i> Harv. | 81. <i>Gloiopeltis cervicornis</i> (Suring.)
Schmitz. |
| 57. <i>Gigartina Teedii</i> (Roth) Lamour. | 82. <i>Peyssonnelia caulifera</i> Okam. |
| 58. <i>Gigartina intermedia</i> Suring. | 83. <i>Corallina radiata</i> Yendo. |
| 59. <i>Eucheuma spinosum</i> (L.) J. Ag. | 84. <i>Zonaria Diesingiana</i> J. Ag. |
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K. OKAMURA

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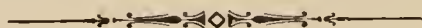
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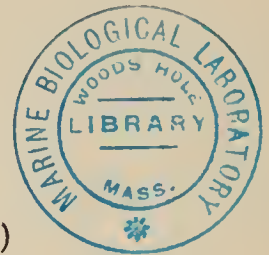
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ICONES OF JAPANESE ALGÆ.

Vol. III. No. III.

BY

K. Okamura *Rigakuhakushi.*



Contents of No. III. (PL. CXI—CXV.)

Dictyota dichotoma (Huds.) Lamour.

あ み ち ぐ さ

Cystoseira articulata J. Ag.

や ば ね も く

Pterocladia capillacea (Gmel.) Born. et Thur.

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Root of Chordaria abietina Rupr.

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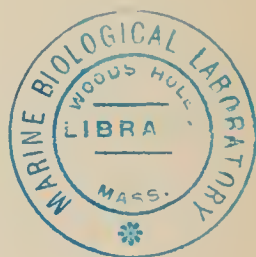
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Tokyo.



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ICONES OF JAPANESE ALGÆ.

Vol. ^{III}IV. No. IV.

BY

K. OKAMURA *Rigakuhakushi.*

Contents of No. IV (PL. CXVI—CXX)



Grateloupia divaricata Okam.

か た の り

Grateloupia ramosissima Okam. n. sp.

す ち む か で

Grateloupia cornea Okam. n. sp.

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Caulerpa racemosa var. clavifera f. macrophysa Weber van
Bosse

せ ん な り づ た

Caulerpa racemosa var. late-virens Weber van Bosse

す り こ ぎ づ た

Caulerpa Webbiana f. tomentella Weber van Bosse

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Codium contaretum Kjellm.

さ き ぶ と み る

Codium intricatum Okam. n. sp.

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Published

by

THE AUTHOR.

December, 1913.

Tokyo.

岡村金太郎著

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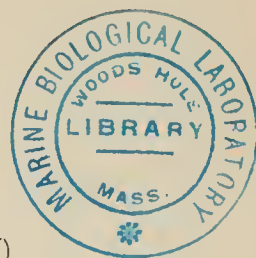
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ICONES OF JAPANESE ALGÆ

Vol. III, No. V

BY

K. Okamura *Rigakuhakushi*



Contents of No. V (PL. CXXI—CXXV)

<i>Tichocarpus crinitus</i> (Gmel.) Rupr.	か れ き ぐ さ
<i>Turnerella Mertensiana</i> (P. et R.) Schmitz	ゑ ぞ な め し
<i>Gloiosiphonia capillaris</i> (Huds.) Carmich	い と ふ の り
<i>Ceramium japonicum</i> Okam.	は ね い ぎ す
<i>Caulerpa anceps</i> Harv.	へ ら い わ づ た
<i>Caulerpa subserrata</i> Okam.	さ ざ み づ た

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第三卷 第六集

理學博士 岡村金太郎 著

ICONES OF JAPANESE ALGÆ.

Vol. III. No. VI.

BY

K. Okamura *Rigakuhakushi.*

Contents of No. VI. (PL. CXXVI—CXXX.)



Gelidium pacificum sp. nov.

Polysiphonia Morrowii Harv.

Turbinaria fusiformis (Harv.) Yendō.

f. clavigera (Harv.) Yendō.

Dictyota dentata Lamour.

Codium mucronatum J. Ag. var. *Californicum* J. Ag.

Caulerpa Fergusoni Murray.

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THE AUTHOR.

Dec., 1914.

Tokyo.

K. OKAMURA.

ALGAE JAPONICAE EXSICCATAE.

日本海藻標品 第二帙

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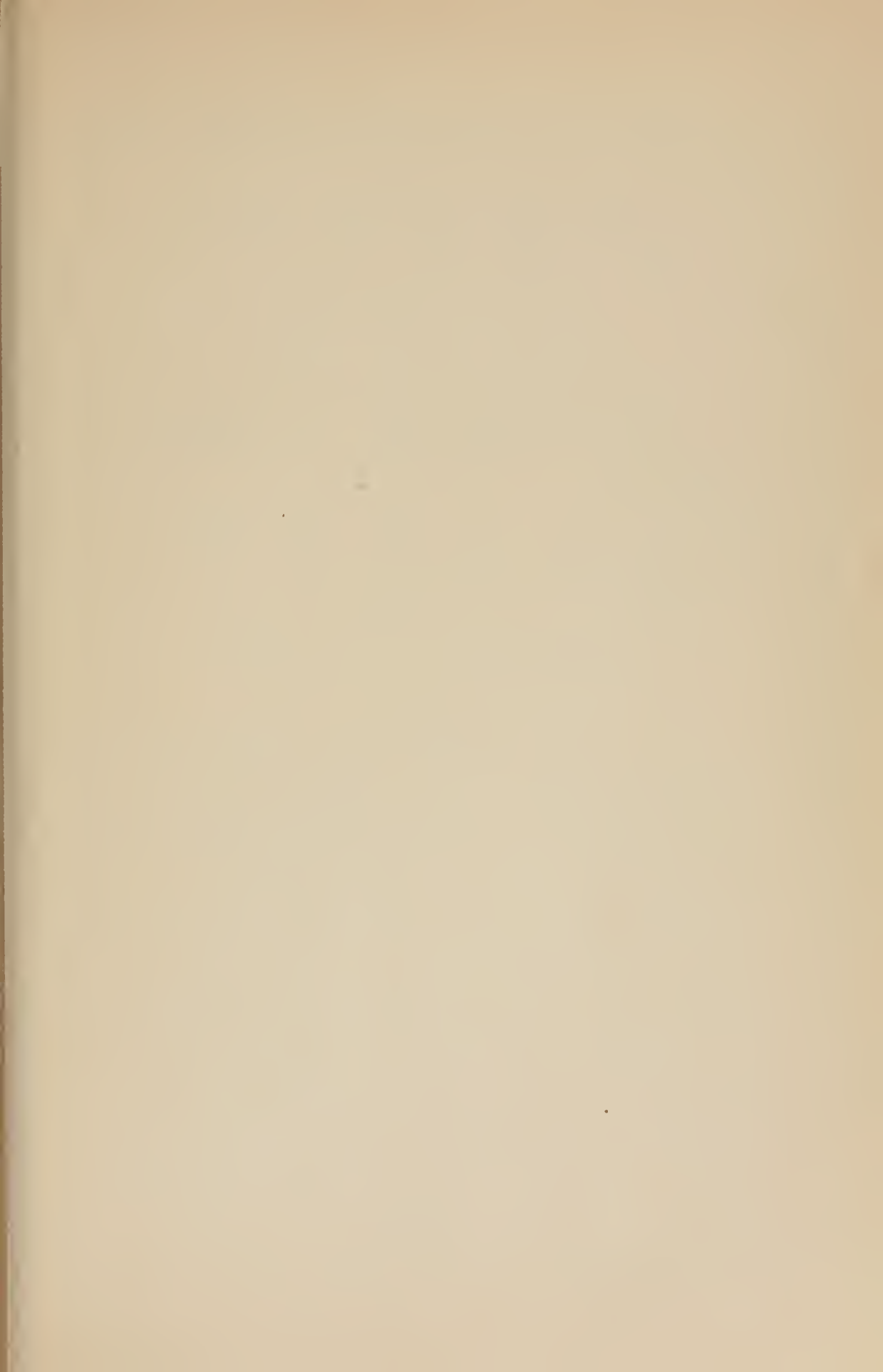
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| 57. <i>Gigartina Teedii</i> (Roth) Lamour. | 81. <i>Gloiopeltis cervicornis</i> (Suring.) Schmitz. |
| 58. <i>Gigartina intermedia</i> Suring. | 82. <i>Peyssonnelia caulifera</i> Okam. |
| 59. <i>Eucheuma spinosum</i> (L.) J. Ag. | 83. <i>Corallina radiata</i> Yendo. |
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| 62. <i>Hypnea seticulosa</i> J. Ag. | 86. <i>Enderachne Binghamiae</i> J. Ag. |
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| 64. <i>Gastroclonium ovale</i> (Huds.) Kuetz. | 88. <i>Cylindrocarpus rugosa</i> Okam. Sp. Nov. |
| 65. <i>Erythrocolon Muelleri</i> (Sond.) J. Ag. | 89. <i>Leathesia difformis</i> (L.) Aresh. |
| 66. <i>Nitophyllum uncinatum</i> (Turn.) J. Ag. | 90. <i>Mesogloea crassa</i> Suring. |
| 67. <i>Caloglossa Leprieurii</i> (Mont.) J. Ag. Var. <i>continua</i> Okam. Nov. Var. | 91. <i>Chordaria abietina</i> Rupr. |
| 68. <i>Caloglossa ogasawaraensis</i> Okam. | 92. <i>Ulva conglobata</i> Kjellm. |
| 69. <i>Acrocystis nana</i> Zanard. | 93. <i>Chaetomorpha crassa</i> (Ag.) Kuetz. |
| 70. <i>Polysiphonia fragilis</i> Suring. | 94. <i>Chaetomorpha spiralis</i> Okam. Sp. Nov. |
| 71. <i>Pterosiphonia pennata</i> (Roth) Fkbg. | 95. <i>Caulerpa ambigua</i> Okam. |
| 72. <i>Symphyocladia Marchantioides</i> (Harv.) Fkbg. | 96. <i>Chlorodesmis comosa</i> Bail. et Harv. |
| 73. <i>Rhodomela Larix</i> (Turn.) Ag. | 97. <i>Codium adhaerens</i> (Cabr.) Ag. |
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| | 100. <i>Brachytrichia Quoyi</i> (Ag.) Born. et Flah. |

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第三卷 第七集

理學博士 岡村金太郎著

ICONES OF JAPANESE ALGÆ

Vol. III, No. VII

BY

K. Okamura *Rigakuhakushu*



Contents of No. VII (PL. CXXXI—CXXXV)

Vidalia obtusiloba (Mert.) J. Ag.	かへりなみ
Compsopogon Ōishii Okam. n. sp.	おほいしさう
Brachytrichia Quoyi (C. Ag.) Born. et Flah.	あゐみどり
Codium adhaerens (Cabr.) C. Ag.	はひみる
Codium coarctatum Okam. n. sp.	ねざしみる
Codium saccatum Okam. n. sp.	ふくろみる
Codium pugniformis Okam. n. sp. prov.	こぶしみる
Codium mamillosum Harv.	たまみる
Codium divaricatum Holm. (non Gepp) f. hybridum Okam.	くろみるノ間種

Published

by

THE AUTHOR

Feb., 1915

Tokyo



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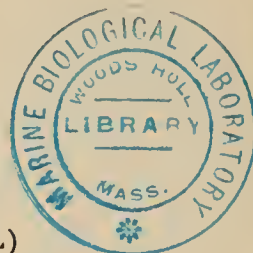
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ICONES OF JAPANESE ALGÆ.

Vol. III No. VIII

BY

K. Okamura *Rigakuhakushi.*



Contents of No. VIII (PL. CXXXVI—CXL)

Codium divaricatum Holm.

f. *hybrida* Okam.

Dictyota spinulosa Harv.

Enteromorpha linza (L.) J. Ag.

Caulerpa ambigua Okam.

Ecklonia stolonifera Okam.

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K. OKAMURA.

ALGAE JAPONICAE EXSICCATE.

日本海藻標品 第二帙

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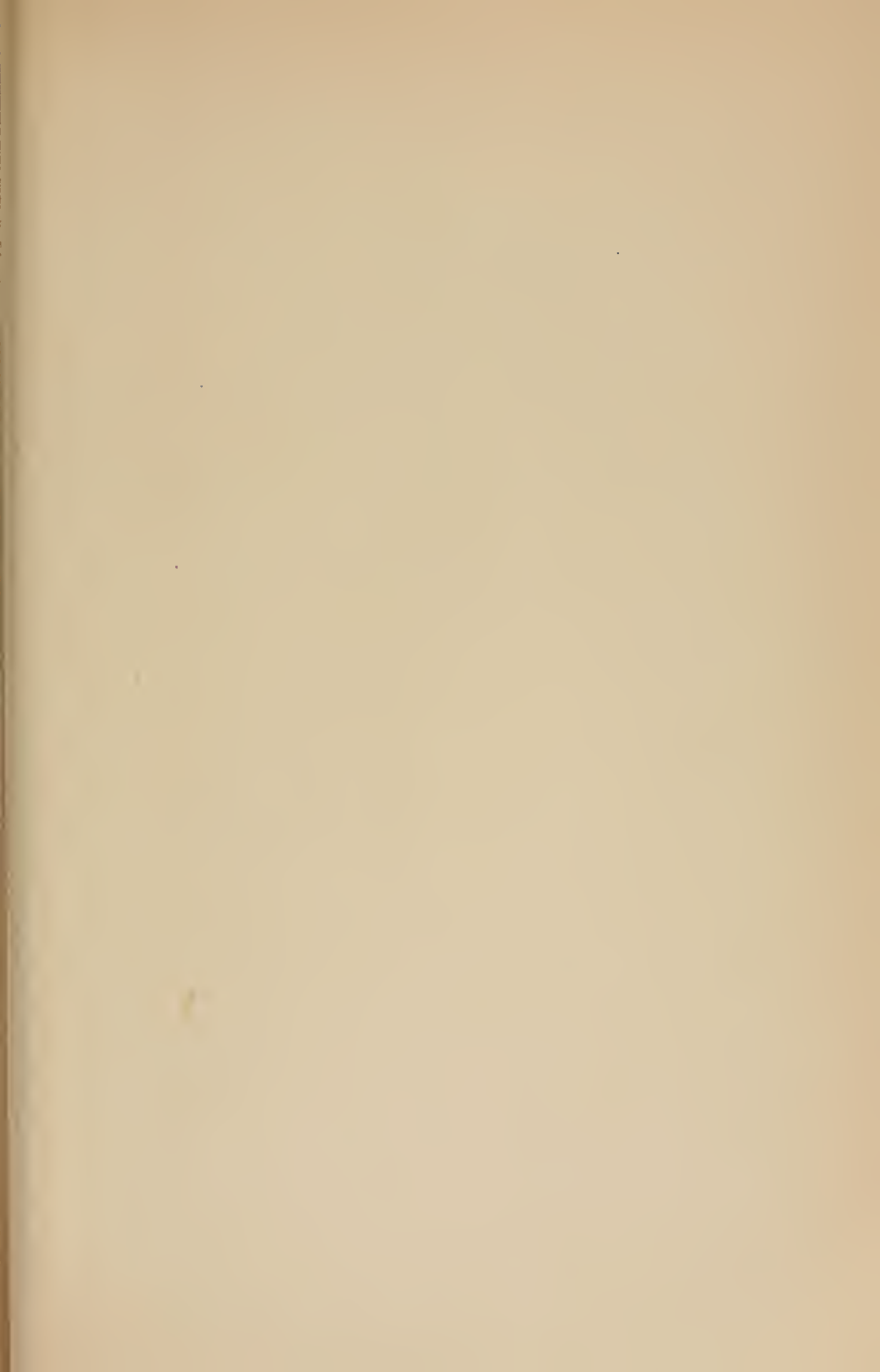
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52. <i>Batrachospermum moniliforme</i> Roth.
53. <i>Batrachospermum virgatum</i> (Kuetz.) Sirod.
54. <i>Batrachospermum Gallaei</i> Sirod.
55. <i>Yatabella hirsuta</i> Okam.
56. <i>Endocladia complanata</i> Harv.
57. <i>Gigartina Teedii</i> (Roth) Lamour.
58. <i>Gigartina intermedia</i> Suring.
59. <i>Eucheuma spinosum</i> (L.) J. Ag.
60. <i>Ceratodictyon spongiosum</i> Zanard.
61. <i>Gracilaria confervoides</i> (L.) Grev.
62. <i>Hypnea seticulosa</i> J. Ag.
63. <i>Hypnea Saidana</i> Holmes.
64. <i>Gastroclonium ovale</i> (Huds.) Kuetz.
65. <i>Erythrocolon Muellieri</i> (Sond.) J. Ag.
66. <i>Nitophyllum uncinatum</i> (Turn.) J. Ag.
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71. <i>Pterosiphonia pennata</i> (Roth) Fkbg.
72. <i>Symphyocladia Marchantioides</i> (Harv.) Fkbg.
73. <i>Rhodomela Larix</i> (Turn.) Ag.
74. <i>Herposiphonia fissidentoides</i> (Holmes) Okam.
75. <i>Heterosiphonia pulchra</i> (Okam.) Fkbg.</p> | <p>76. <i>Ptilota pectinata</i> (Gunn.) Kjellm. f. <i>typica</i> Kjellm.
77. <i>Carpoblepharis Schmitziana</i> (Rbd.) Okam.
78. <i>Ceramium clavulatum</i> Ag.
79. <i>Microcladia corallinae</i> (Mart.) Okam.
80. <i>Campylaeophora Hypnaeoides</i> J. Ag.
81. <i>Gloiopeltis cervicornis</i> (Suring.) Schmitz.
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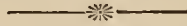


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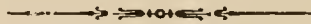
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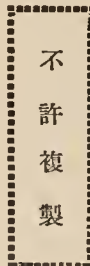
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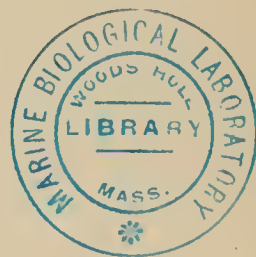
ICONES OF JAPANESE ALGÆ.

Vol. III No. IX

BY

K. Okamura *Rigakuhakushi.*

Contents of No. IX (PL. CXLI—CXLV)



Codium cylindricum Holm.

な が み る

Codium latum Sur.

ひ ら み る

Chordaria firma E. S. Gepp

い し も づ く

Chordaria Cladosiphon Kuetz.

く さ も づ く

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THE AUTHOR.

June, 1915

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日本海藻標品 第二帙

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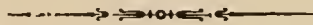
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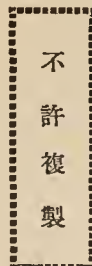
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ICONES OF JAPANESE ALGÆ

Vol. III, No. X

BY

K. Okamura *Rigakuhakushi*



Contents of No. X (PL. CXLVI—CL)

Gelidium crinale (Turn.) Lam.

いとてんぐさ

Herposiphonia subdisticha Okam.

くろひめごけ

Halimeda cuneata Hering.

うちはさぼてんぐさ

Halimeda Opuntia Lam. *F. cordata* Barton

さぼてんぐさ

F. Renschii Barton

ひめさぼてんぐさ

Halimeda macroloba Decne.

ひろはさぼてんぐさ

Halimeda incrassata Lam. *F. typica* Barton

みつでさぼてんぐさ

F. Lamourouxii Barton

Published

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THE AUTHOR

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